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# HAWAII MEDICAL JOURNAL

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# Working Women

Nearly all women work. Some are employed; they and others also work! Housewives work and some are also employed outside the home.

In this issue of the Journal, Halfon, Kodama and Arbeit give us the results of their research on the health of women. That research proves what a lot of us already know.

Staying home to bear children and to raise them is work, work, work — day and night. It is often more stressful than going to a job or office for only 8 hours a day, 5 days a week.

A. Brian Little MD of Montreal, Canada, wrote in the *NEJM* of 11 October 1990: "In recent years, women have gone from being a national treasure, to being recognized as a national resource."

That's because so many of them now have two jobs — the one in the home, the other outside as a bread-winner.

Medically speaking, Brian states that 34% of medical students now are women and 28% of House Staff Residents.

However, as more and more women enter man's domain, they will find it to be a rough and tumble arena with no holds barred.

J I Frederick Reppun MD
Editor

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To the Editor,

It is a pleasure for me to enclose a listing of the award winners for the 1990 John A. Burns School of Medicine Annual Biomedical Sciences Symposium. This listing represents the best among a field of truly outstanding research programs. The symposium on 6 October 1990 had in excess of sixty oral and poster presentations containing a mixture of excellent clinical and basic science research.

At the School we feel that research and its reporting represents the life blood of an active and effective medical educational curriculum. I wish to extend to our colleagues in the medical profession an invitation to join us during next year's symposium.

Christian L. Gulbrandsen MD
Dean

**I. DEAN'S AWARDS FOR THE MOST OUTSTANDING PAPERS IN THE SYMPOSIUM**

**UNDERGRADUATE CATEGORY AT THE UNIVERSITY OF HAWAII**

Ms. Sally Kim.....Department of Medicine
John A. Burns School of Medicine

Effect of Recombinant Interleukin-2 (IL-2) Therapy on Lymphocytes and Natural Killer (NK) Cells in Cancer Patients.

**GRADUATE CATEGORY AT THE UNIVERSITY OF HAWAII**

Mr. Pharis Mohideen .....Department of Physiology
John A. Burns School of Medicine

The Acute Effects of 100% Normobaric $O_2$ on Rat and Mouse Pulmonary Alveolar Macrophage Fungal Cytotoxicity.

**MEDICAL STUDENT CATEGORY AT THE UNIVERSITY OF HAWAII**

Ms. Stacey Ann H. Honda, .....Department of Medicine
Medical Student II John A. Burns School of Medicine

Use of Polymerase Chain Reaction to Detect HTLVI Infection.

**RESIDENT CATEGORY AT THE JOHN A. BURNS SCHOOL OF MEDICINE (JABSOM)**

Dean Sato, MD.....Department of Surgery

Treatment of Advanced Renal and Colon Cancer Patients with Recombinant Interleukin-2 (r-IL2): Analysis of NK/LAK Cell Cytotoxicity and Lymphocyte Phenotype During Therapy.

**POSTDOCTORATE CATEGORY AT THE UNIVERSITY OF HAWAII**

Theodore L. Hazlett, PhD.....Department of Biochemistry and Biophysics, JABSOM

The √-Phosphate Analogue Aluminum Fluoride Distinguishes Structural Differences Between the Nucleotide Binding Sites of Elongation Factor Tu and $G_{\infty}$.

**II. DEPARTMENTAL AWARDS, JOHN A. BURNS SCHOOL OF MEDICINE**

**DEPARTMENT OF GENETICS AWARD**

Ms. Lei-Anna Willman .....Department of Zoology
University of Hawaii

MtDNA Sequence Analysis of Human Tetraginathids.

**DEPARTMENT OF OBSTETRICS AND GYNECOLOGY AWARD**

Ms. Jana K. Silva, Medical Student III.....JABSOM

Outcome of the First 100 Infants Conceived Through the Pacific In-Vitro Fertilization Institute

*(Continued)* ▶

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LETTER TO THE EDITOR *(Continued from page 4)*

**DEPARTMENT OF PEDIATRICS AWARD**
Cynthia Tinsley, MD .....Fellow, Department of Pediatrics JABSOM
New Approach to the Treatment of Infantile Botulism.

**III. SPECIAL AWARDS**

**PACIFIC BIOMEDICAL RESEARCH CENTER UNDERGRADUATE RESEARCH AWARD**
Mr. Michael H. Dukelow .....Cancer Research Center of Hawaii
Characterization of Aquatic Natural Products Which Inhibit Type I and 2A Protein Phosphates.

**ASSOCIATION OF WOMEN IN SCIENCE ANN M. BUDY UNDERGRADUATE AWARD**
Ms. Rosie O. Villagomez .....Department of Pharmacology JABSOM
Characteristics of Adenylate Cyclase and Gs Protein In Isoproterenol-Induced Cardiac Hypertrophy.

**ASSOCIATION OF WOMEN IN SCIENCE ANN M. BUDY GRADUATE AWARD**
Ms. Li Xin Zhang.....Cancer Research Center of Hawaii
Enhancement of Cell-to-Cell Communication by Carotenoids Correlates With Their Ability to Inhibit Neoplastic Transformation.

**AMERICAN HEART ASSOCIATION AWARD IN CARDIOVASCULAR RESEARCH**
Kathleen Ogata, PhD.....Department of Biochemistry and Biophysics, JABSOM
Mitochondrial Rhodanese: Membrane Bound and Complexed Activity.

**THE CIBA-GEIGY-SUMMIT RESEARCH AWARD**
Danny M. Takanishi, MD Department of Surgery
Post-operative Hypothermia and Post-operative Complications.

**THE MERCK RESEARCH AWARD**
Mr. Mark Estacion.....Cancer Research Center of Hawaii
PDGF Mobilizes Multiple Calcium Pools in 10T½ Fibroblasts.

**THE SMITH-KLINE RESEARCH AWARD**
Clete A. Kushida, MD, PhD.....Department of Medicine JABSOM
The Effects of Chronic REM Sleep Deprivation in the Rat.

**THE WYETH-AYERST RESEARCH AWARD**
Ms. Becky A. Diebold.....Department of Biochemistry and Biophysics, JABSOM
Characteristics of a NADPH Oxidase of Guinea Pig Neutrophils.

**THE ORTHO RESEARCH AWARD**
Mel C. Jackson, PhD .....Department of Pharmacology
Serum Carnosinase: Purification and Immunohistochemical Localization in Human Brain.

**THE ROCHE RESEARCH AWARD**
Mr. Derek S. Shirae.....Department of Biochemistry and Biophysics, JABSOM
Active Constituent of Marijuana Opens Chloride Channel.

**THE ROERIG/PFIZER RESEARCH AWARD**
Ms. Alice Pong, Medical Student III .....Department of Pediatrics
Group A Streptococcal Bacteremia in Pediatric and Maternity Patients.

**THE SANDOZ RESEARCH AWARD**
Ms. Martha Y. Kanemitsu .....Cancer Research Center of Hawaii
Cell-Cell Communication is a Tyrosine Protein Kinase Independent Function of Growth Factor Receptors.

# Highlights of the HMA Council Meeting of December 7, 1990

As the first Council meeting for John McDonnell as President, he introduced returning and new Councilors and bid them welcome.

Members and others present at the meeting included: J. McDonnell, J. Chang, M. Shirasu, A. Kunimoto, C. Kam, S. Wallach, K. Kurohara, D. Heeney, W. Young, H. H. Chun, P. DeMare, J. Spangler, E. Bade, R. Goodale, D. Fu, T. Smith, G. Goto, J. Lumeng, W. Dang, P. Blanchette, W. Chang, H. Chinn, A. Don, H. Fong, E. Morgan, H. Percy, J. I. Reppun, R. Lee-Ching, V. Char, John Houk, K. Thorburn, student J. Taitague, and HMA Auxiliary President Maureen Lau. HMA staff present were: J. Won, N. Jones, B. Kendro, L. Tong, J. Asato, P. Kawamoto, J. Estioko, recording secretary M. Lindsey, C. Sugita and L. Funai. Legal Counsel V. Woo.

- HMA Speaker of the House, Dr. Richard Ando, Sr., submitted his written report to the HMA Annual Meeting of October 12-14, 1990, and was commended for an excellent report.
- A letter from C. Brown requesting the HMA to file an amicus curiae with the State Supreme Court relating to her suit against the State of Hawaii and its Medicaid Fraud Unit was discussed. Council was concerned with the question of civil rights and due process for physicians under investigation and that the HMA Executive Committee should follow up to see if the time and cost is warranted.
- Approved sending a letter to President Bush requesting the immediate dismissal of US Department of Health and Human Services Inspector General Richard Kusserow because of his unacceptable behavior in his office.
- Approved support of the AMA's Health Access America program which seeks to provide access to health insurance for all Americans via employer-mandated health insurance. It was noted that the AMA has sought input from the HMA in this endeavor.
- Approved a 3-page letter to HMSA relative to its November 15 notice to physicians about its significant changes in its reimbursement policies that affect participating agreements with physicians. The letter raised quite a number of issues and questions and asked HMSA to defer implementation of these new policies for one year until we had an opportunity to be educated about the changes and the reasons for such changes or to offer alternative solutions for HMSA's concerns. It also asked that a copy of this letter be sent to the membership.
- The HMA Ad Hoc Committee on Nurse Practitioner Prescribing Practices reported on its activities to date, including attendance at a meeting on this topic in San Diego, the survey findings by SMS Research, Inc., which indicated that two-thirds of physicians are opposed to such prescriptive authority, and a meeting with representatives of the Hawaii Nurses Association. The discussion was lively, and Council adopted the Committee's two recommendations which are: 1)Any legislation introduced that would permit such prescribing to occur will be opposed by the HMA; 2) HMA will propose a resolution to the Legislature calling for an objective review of the experience elsewhere relative to nurse prescribing practices and especially an in-depth study of quality of care issues. (Note: Subsequent meeting of Nurse Practitioner Committee looks at clarification and reconsideration of recommendation number 2 for next Council meeting.)

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# Human anisakiasis transmitted by marine food products

Thomas L. Deardorff PhD*
Stephen G. Kayes PhD*
Takakazu Fukumura MD**

*Seafood-transmitted parasitic diseases represent an emerging area of interest to the U.S. Food and Drug Administration. Human infections with marine parasites are generally the result of ingesting uncooked seafood products. Over 50 species of helminthic parasites are known to infect humans worldwide. Recently, the number of infections with one of these helminths, the juvenile stage of the marine nematode,* Anisakis simplex, *has increased in the United States. Raw fish dishes such as lomi lomi salmon and sashimi are known to transmit the parasite to unsuspecting citizens and the most frequently implicated fish in the transmission of this zoonotic disease is the Pacific salmon (*Oncorhynchus *spp.). The risk of infection from fishes caught in Hawaiian waters is slight; however, a juvenile* Anisakis simplex *infected one patient from either locally caught aku or ahi. We report 4 new cases, which brings the total number of known cases in Hawaii to 7. Five of the 7 cases were diagnosed and treated by means of an endoscope and biopsy forceps. Serological profiles are presented in several of these cases. One case represents the first known instance of reinfection; the initial infection occurred 2 years prior. The second infection gave an opportunity to compare the human response to a challenge infection and to investigate the validity of the "double hit" theory. Increased awareness by physicians to the clinical features of this disease is warranted. The zoonotic disease, anisakiasis, should be considered in patients presenting with intense abdominal pain, if these patients admit they have recently eaten raw or undercooked seafoods.*

There may be a catch-22 associated with the catch-of-the-day; especially if that catch is to be consumed raw or partially cooked. Most U.S. citizens are aware of the alleged benefits of eating seafoods (eg, high in omega 3-fatty acids, low in saturated fats and an excellent source of protein), but remain oblivious to the potential health risks. The health hazards represent the catch-22. Repeated exposure to parasitic infections is one type of hazard for consumers of raw or partially-cooked seafood.

Nearly every animal in the marine environment is infected with parasites[1]. The vast majority of the known marine parasites, whether they are mature or juvenile forms, do not seriously harm their marine host and will not infect humans. Some seafood parasites, however, may infect humans. These parasites — most often juvenile stages — are often found in the edible portions of the finfishes or shellfishes and survive the food preparation process.

The potential for transmission of parasites from seafood products to humans obviously is greater in areas where marine products comprise a large portion of the protein intake of a population; especially if those foods are ingested raw or not thoroughly cooked. For example, Japan reports about 1,000 episodes of just one parasitic disease, anisakiasis, per year[2]. Conversely, in areas like the U.S. where most seafood is thoroughly cooked, approximately 50 cases of anisakiasis have been reported.

The number of new cases reported in the U.S. is increasing and because of the inherent difficulty in diagnosing the disease, the known U.S. cases may be only the "tip of the iceberg"[1,3-6]. Changes in our dietary habits incorporating ethnic and "natural" foods, tendencies to reduce cooking times for marine food products, and our increasing usage of the marine environment play a role in this escalation. The consumption of raw fish dishes, such as sashimi, lomi lomi salmon, and ceviche, or other inadequately cooked seafood, can cause this disease.

In view of the numerous ethnic and "natural" seafood dishes served in Hawaii, it is puzzling why relatively few seafood-transmitted zoonoses have been reported[1]. Perhaps infections did occur but went undiagnosed. Accurate diagnoses of anisakiasis may be difficult on account of the broad spectrum of clinical manifestations associated with this disease. Further, there may exist a lack of awareness on the part of the local medical practitioners concerning this disease.

This article, therefore, reviews the salient features of the parasitic disease anisakiasis, reports 4 new human cases in Hawaii, and presents specific serologic data associated with these cases. We hope to increase the awareness of local clinicians and physicians concerning this rare but potentially infec-

(Continued) ▶

* Department of Structural and Cellular Biology
College of Medicine
University of South Alabama
Mobile, Alabama 36688
** 2525 S. King Street, Suite 309
Honolulu, Hawaii 96826

Request for reprints:
Thomas L. Deardorff, PhD
Dept. of Structural and Cellular Biology College

tive parasite transmitted by seafoods. Readers who are interested are referred to recent reviews concerning anisakiasis for a more global perspective and for additional details[1,4,5,7].

### Human anisakiasis

In recent years, juvenile nematodes belonging to the genera *Anisakis* and *Pseudoterranova* have received considerable attention because of the increase in the number of cases of human infection in the United States[6,8-11] and elsewhere[7,12]. The consumption of contaminated raw or inadequately prepared seafoods transmits the infective juveniles to humans. The juvenile *Anisakis simplex* is about 2-cm-long, 1-mm-wide, white, and tightly coiled in the fish tissue. It is extremely difficult to see within the musculature even by the most experienced sushi chefs and parasitologists. When a viable juvenile anisakid nematode is ingested, the parasite may penetrate into or through the wall of gastrointestinal tract of a host. The resultant disease is called invasive anisakiasis.

In rare instances, a juvenile *Pseudoterranova decipiens* may migrate from the stomach up the esophagus, tickle the throat, and be coughed-up by the patient. This type of infection has been termed luminal or non-invasive anisakiasis[5]. The worms causing this "tickling throat" syndrome are commonly called codworms because of their occurrence in fillets of Atlantic cod (although they may be found in the flesh of other bottom-feeding fishes). Public health authorities probably receive more consumer complaints about codworms than any other nematode. The codworm is approximately 5-cm-long and generally reddish; hence, it is easily observed in the white flesh of cod fillets. The cod fish industry has admitted that this parasite has had a considerable adverse effect on marketing the fish and it spends millions of dollars a year in removing the worms. Heavy infections represent an adulterated product and may lead to its rejection. We have seen live juveniles of *Pseudoterranova decipiens* in imported fishes in Hawaii. However, no cases of human infection with the larvae of this genus have been reported in Hawaii.

### Clinical presentation

Sudden, severe, episodic, epigastric distress, sometimes accompanied by nausea and vomiting, usually occurs within 1 to 12 hours after eating the seafood. The literature suggests that the acute epigastric pain generally occurs within 6 hours after consumption of the raw fish; however, episodes have been reported where acute gastric pain was not experienced by the patient until 14 days after eating raw seafood[8,13-15]. Diarrhea and urticaria have been associated with some infections. As in the case of most helminth infections, an increase in peripheral blood eosinophils (from 4 to 41%) may occur in the chronic stages of the disease. Occult blood in the gastric juice or in the stools, slight elevation of temperature and moderate leukocytosis (10,000 to 15,000 leukocytes per $mm^3$) may result.

Patients with intestinal anisakiasis often present with symptoms suggestive of acute appendicitis although the pain, often associated with the lower right quadrant, may not be as well defined as in acute appendicitis. Edema of the bowel wall may be visible in radiographs or during surgery.

### Diagnosis and treatment

The importance of determining whether raw seafood has been eaten recently cannot be over emphasized in terms of making a diagnosis. Clinical features of this can be specific or ambiguous and, therefore, often confuse the diagnostician. Clinicopathologic-confirmed cases of anisakiasis occur in Japan in cases of such divergent preoperative diagnoses as appendicitis, ileitis, diverticulitis, cholecystitis, tuberculosis peritonitis, gastric or pancreatic tumors, and Crohn's disease[16]. The association of juvenile *Anisakis* with cancer has been noted but the worm is not suspected to have induced the cancer[17,18].

An endoscope is very effective in making the diagnosis (Fig. 1) and it is useful in subsequent treatment of gastric anisakiasis. The use of a biopsy forceps to grasp and remove the juvenile worm is demonstrated in Figure 2. Physicians should note that, although the worm's anterior end may be attached to the wall of the lower stomach, the helminth is quite capable of rapid movement within the lumen of the stomach and thus may evade the instrument. The degree of difficulty in removing these lively juvenile worms increases if the worm is not attached to the gastric lining. They move with great speed; their mobility is further enhanced because of the narrow field of vision of the endoscope. Recapturing a worm inadvertently released from the forceps, a scenario one of us (TF) experienced with our first patient, can be time-consuming and frustrating. Figure 3 shows the live worm removed from the gastric lining in Case 5.

Radiography may be helpful as a diagnostic method in some instances but is not totally reliable[9,13,15]. The characteristics of intestinal anisakiasis are not unlike those in cases of intestinal submucosal hemorrhage, ischemic ileitis and regional enteritis[14].



Fig. 1. Endoscopic photograph of a juvenile *Anisakis simplex* tightly coiled at the anterior lesser curvature of the stomach of our patient in Case 2. Note reddened area in center of coil indicating site of penetration (arrow).

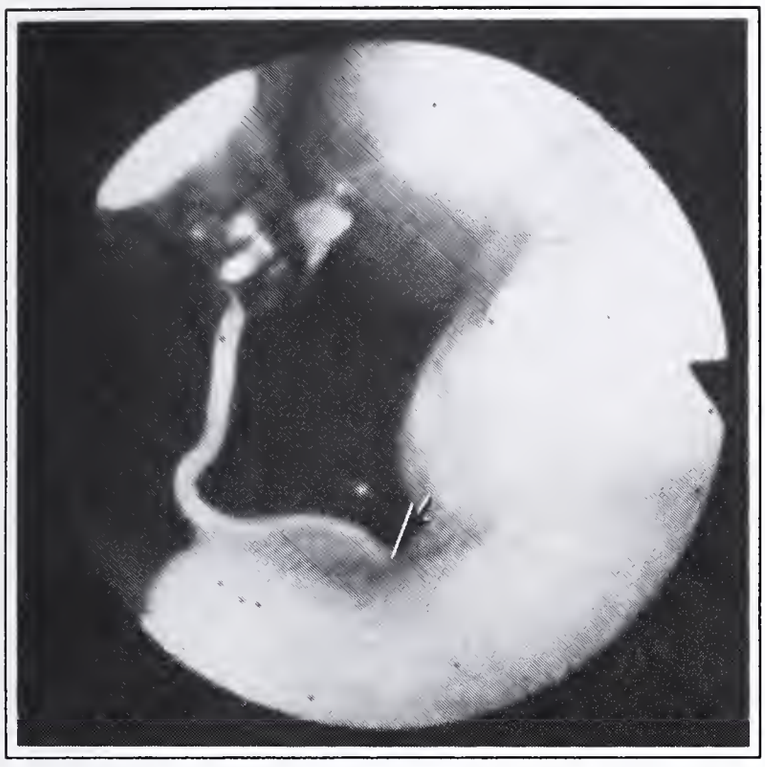


Fig. 2. Removal of worm with biopsy forceps. Note anterior extremity of worm still attached (arrow) to mucosal lining.

If the worm is lodged in an area inaccessible to the endoscope, surgery may be required to remove the worm. A recent report suggested that surgical intervention is not necessary in most patients with intestinal anisakiasis because conservative treatment may be successful[14]. Our Cases 6 and 7 (Table 1), for example, experienced acute pain but recovered without treatment. Death is unlikely, although 2 fatalities in the literature were attributed to peritonitis following perforation of the bowel at the site of intestinal resection[4]. The worm does not mature in humans and research has shown that the worms do not survive in vivo beyond 3 weeks post-infection in a mouse host[19]. Currently there is no effective drug as an anti-helmintic against this parasite.

**Life cycle and history**

The life cycle of anisakid worms, which begins and ends in marine mammals such as whales, sea lions, seals, and dolphins, may be complex (Fig. 4). Adult female worms (the sexes are separate) lay eggs in the stomach of the marine-mammal host and the eggs pass out with the feces into the water. A second-stage juvenile will emerge within a few days from the egg and may be eaten by a variety of crustaceans (eg copepods and shrimp). If that crustacean represents an acceptable intermediate host, the worm develops into a third-stage juvenile in the hemocoel of that animal. It may be infective to some marine mammals at this stage. Should that crustacean not be a suitable host, the life cycle may involve fishes. When the fish eats the infected crustacean, it becomes infected. Finally, marine mammals feed on the infected fishes and the life cycle of the anisakid nematode is completed. Humans may become infected by intervening in the natural life cycle by eating the infected fish.

Because the worms mature in marine mammals, it is generally assumed that the prevalence and intensity of potentially invasive parasites in fishes is greater in areas where mammals are plentiful. Thus, marine mammals may serve as a barometer to predict the infective potential of worms in fishes. The U.S. Food and Drug Administration (FDA) conducted studies to determine the incidence and pathogenic potential of anisakine nematodes in marine fin- and shell-fishes from the coastal waters of the continental U.S. These studies revealed that fishes caught off the Pacific coast have a greater worm burden than fishes caught in other survey areas. Concomitantly, the concentration of marine mammals along the Pacific coast is significantly greater compared with the other survey areas. Other studies have confirmed the correlation between the numbers of invasive worms and the presence of marine mammals.



Fig. 3. Close-up of juvenile *Anisakis simplex* retrieved from stomach of patient in Case 5. Bar = 1 cm.

Concerning the FDA's study of the territorial fishing waters off the Hawaiian Islands, it concluded that, because nearly all anisakine larvae were found in nonedible tissues of the fishes and invertebrates caught in local waters, the risk of infection to the consumer was probably slight[20,21]. Fishes imported to Hawaii for consumption, however, represented a more substantial problem to local conumers.

A total of 158 specimens of finfishes imported to Hawaii, representing 15 species, were examined between 1980 and 1985 (TLD, unpublished data). Of these fishes, Pacific salmon (*Oncorhynchus* spp.), cod (*Gadus* spp.), pollack (*Theragra* spp.), and "Pacific red snapper" (*Sebastes* spp.) were infected with juvenile *Anisakis simplex;* fishes in the latter 3 genera also were infected with juvenile *Pseudoterranova decipiens.* Of the imported fishes examined, salmon probably represent the greatest health risk to the people of Hawaii because of the popularity of lomi lomi salmon. Juvenile *Anisakis simplex* were found in 91% of the salmon examined. Furthermore, when 20 salmon steaks (average 150 grams) and rockfish fillets (average 150 grams per fillet) were purchased from local supermarkets and examined, all samples were positive for the potentially invasive juvenile *Anisakis simplex.* All juvenile *Anisakis simplex* found in the salmon steaks were dead; likely a result of the commercial blast-freezing process completed prior to cutting the salmon steaks[1]. However, some of the worms in the rockfish were alive.

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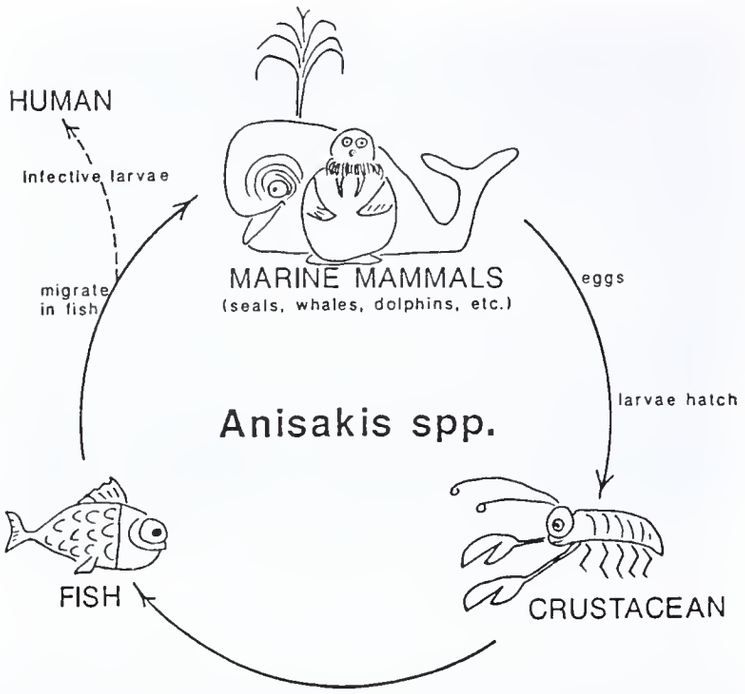



Fig. 4. Generalized life cycle of a marine ascaridoid[1]. This large group of nematodes has adults that infect the stomach or intestine of a variety of marine mammals and juveniles that encyst in fishes or crustaceans. The juvenile stage that encapsulates in fishes has been confirmed to infect humans[1].

### Hawaiian cases

The majority of cases in the U.S. result from eating raw Pacific salmon (*Oncorhynchus* spp.) or rockfish (*Sebastes* spp.); juvenile *Anisakis simplex* are most commonly implicated. Most Hawaiian cases of anisakiasis are transmitted by salmon (Table 1) and all worms recovered from patients in Hawaii have been identified as *Anisakis simplex*.

Table 1 shows the salient facts concerning the known suspected and confirmed cases of human anisakiasis in Hawaii. A juvenile *Anisakis simplex* was removed with the aid of an endoscope from each of the patients in Cases 1-5. Cases 5-7 represented a single family; wife, husband, and child, respectively. All developed similar acute gastric pain one hour following ingestion of the same sashimi meal. Case 6 subsequently was confirmed by serologic testing (Fig. 5). No serum was collected from the child, but we believe he was infected.

A reliable and practical diagnostic assay currently utilized is the radioallergosorbent assay (RAST)[3-5,9,22]. The assay is based on increased IgE titers associated with helminthic infections. Briefly, the RAST determines the level of parasite-specific IgE in the patient's serum. *Anisakis simplex* antigens were coupled to cyanogen bromide-activated beads and reacted with the sera. $I^{125}$-labled antihuman IgE antibodies were used to detect bound IgE and the data are expressed as counts per minute (cpm). The sera were tested against antigen of *Ascaris suum* to rule out infection with this closely related parasite.

Figure 5 depicts relative *Anisakis*-specific IgE levels from Case 1a,b (days 11 and 60 post-infection), Case 2a,b (days 6 and 50), Case 5a,b (days 9 and 30), and Case 6 (day 24). Patients in Cases 1, 2, and 5 showed an increase in *Anisakis*-specific IgE levels even after the juvenile worms were removed. This was expected. Our data demonstrate that

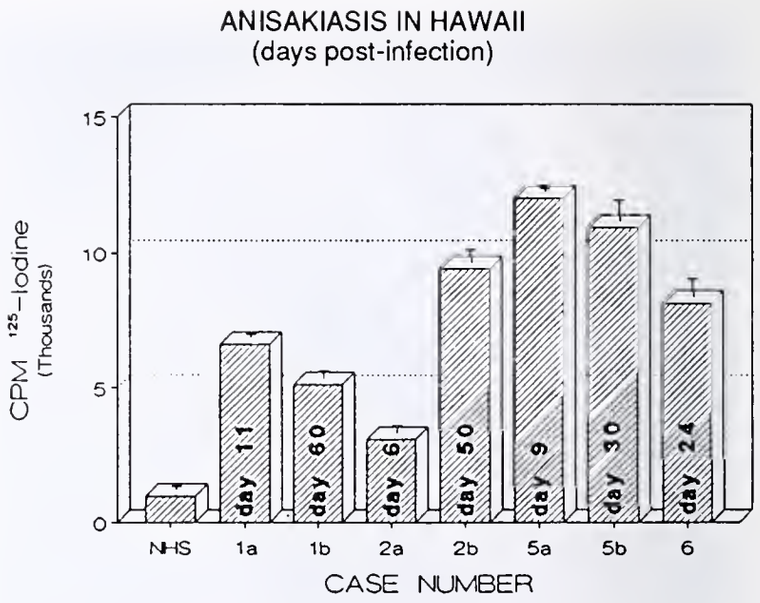



Fig. 5. Radioallergosorbent test results detecting *Anisakis*-specific IgE antibodies from patient's sera. Number within bars refer to the day serum was drawn post-infection. Case numbers correspond with those in Table 1.

*Anisakis*-specific IgE levels rapidly increase following infection, appear to peak near 30 days post-infection, and gradually decrease. How long these levels remain elevated is unknown; however, one case report from San Francisco, California, demonstrated that the IgE levels remain nearly 3-fold higher than normal 6 months later[3].

Cases 1 and 2 are unique because they represent the same patient. There have been conflicting opinions in the scientific literature with regard to whether or not the "double hit" theory is valid for anisakiasis. This theory holds that the second infection with a juvenile *Anisakis simplex* will invoke an anamnestic eosinophilic inflammation measurably greater than observed during the first or primary infection. Our patient represents the first reported case of reinfection and allowed us the opportunity to compare the human reponses with a challenge.

Subjective findings compiled in Case 2 suggested the validity of the "double hit" theory. The patient stated that the second exposure was substantially more painful and severe as compared with the initial infection. During the esophagogastroduodenoscopy for the second occurrence, we noted that the inflamed area extended a greater distance from the point of worm penetration and that the erosion was deeper.

The results of the RAST strengthened the validity of a heightened response. Figure 5 illustrates that *Anisakis*-specific IgE levels at day 50 post-infection in Case 2 were nearly 2-fold greater as compared with day 60 in Case 1 (9,430 versus 5,116 cpms, respectively). Furthermore, the reinfection sera (Case 2) represented the only incident wherein the IgE levels continued to rise dramatically 7 weeks later. This is a significant contrast with Cases 1 and 5, as well as with a report of 9 cases of acute gastric anisakiasis in Japan[23]. In that report, RAST results showed that the IgE response was measurable by day 1, increased rapidly for 3 to 5 weeks, and then gradually decreased. Those findings were similar to our Cases 1 and 5. We speculate that the continued rise in IgE levels in Case 2

*(Continued)* ▶

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**Contraindication:** Known allergy to cephalosporins.

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Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics. It must be considered in differential diagnosis of antibiotic-associated diarrhea. Colon flora is altered by broad-spectrum antibiotic treatment, possibly resulting in antibiotic-associated colitis.

**Precautions:**

- Discontinue Ceclor in the event of allergic reactions to it.
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- Positive direct Coombs' tests have been reported during treatment with cephalosporins.
- Ceclor should be administered with caution in the presence of markedly impaired renal function. Although dosage adjustments in moderate to severe renal impairment are usually not required, careful clinical observation and laboratory studies should be made.
- Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.
- Safety and effectiveness have not been determined in pregnancy, lactation, and infants less than one month old. Ceclor penetrates mother's milk. Exercise caution in prescribing for these patients.

**Adverse Reactions:** (percentage of patients)

Therapy-related adverse reactions are uncommon. Those reported include:

- Hypersensitivity reactions have been reported in about 1.5% of patients and include morbilliform eruptions (1 in 100). Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of **serum-sickness-like** reactions have been reported with the use of Ceclor. These are characterized by findings of erythema multiforme, rashes, and other skin manifestations accompanied by arthritis/arthralgia, with or without fever, and differ from classic serum sickness in that there is infrequently associated lymphadenopathy and proteinuria, no circulating immune complexes, and no evidence to date of sequelae of the reaction. While further investigation is ongoing, **serum-sickness-like** reactions appear to be due to hypersensitivity and more often occur during or following a second (or subsequent) course of therapy with Ceclor. Such reactions have been reported more frequently in children than in adults with an overall occurrence ranging from 1 in 200 (0.5%) in one focused trial to 2 in 8,346 (0.024%) in overall clinical trials (with an incidence in children in clinical trials of 0.055%) to 1 in 38,000 (0.003%) in spontaneous event reports. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy; occasionally these reactions have resulted in hospitalization, usually of short duration (median hospitalization = two to three days, based on postmarketing surveillance studies). In those requiring hospitalization, the symptoms have ranged from mild to severe at the time of admission with more of the severe reactions occurring in children. Antihistamines and glucocorticoids appear to enhance resolution of the signs and symptoms. No serious sequelae have been reported.
- Stevens-Johnson syndrome, toxic epidermal necrolysis, and anaphylaxis have been reported rarely. Anaphylaxis may be more common in patients with a history of penicillin allergy.
- Gastrointestinal (mostly diarrhea): 2.5%
- Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment.
- As with some penicillins and some other cephalosporins, transient hepatitis and cholestatic jaundice have been reported rarely.
- Rarely, reversible hyperactivity, nervousness, insomnia, confusion, hypertonia, dizziness, and somnolence have been reported.
- Other: eosinophilia, 2%; genital pruritus or vaginitis, less than 1% and, rarely, thrombocytopenia and reversible interstitial nephritis.

Abnormalities in laboratory results of uncertain etiology.

- Slight elevations in hepatic enzymes.
- Transient lymphocytosis, leukopenia, and, rarely, hemolytic anemia and reversible neutropenia.
- Rare reports of increased prothrombin time with or without clinical bleeding in patients receiving Ceclor and Coumadin concomitantly.
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Table 1. Case history highlights of anisakiasis occurring in Hawaii

| Case No. | Date (m/yr)* | Location of Parasite | Interval Between Ingestion and Expression of Symptoms | Raw Seafood Implicated | References |
|---|---|---|---|---|---|
| 1 | 8/84 | Stomach | 11 hours | Pacific Salmon | 9 |
| 2 | 10/86 | Stomach | 1 hour | Pacific Salmon | This Report |
| 3 | 1986 | Stomach | No data | Ahi and Aku | 3,28 |
| 4 | 1986 | Duodenum | No data | Imported Squid | 3,28 |
| 5 | 8/89 | Stomach | 1 hour | Pacific Salmon | This Report |
| 6 | 8/89 | Not Examined**,+ | 1 hour | Pacific Salmon | This Report |
| 7 | 8/89 | Not Examined**,† | 1 hour | Pacific Salmon | This Report |

*Month omitted if not available.
**Endoscope not used
+Confirmed by serologic testing
†Suspected infection (see text).

was a function of an infection of a previously sensitized patient.

An argument could be made that the worm penetrated more aggressively in the second infection; therefore, the signs and symptoms were more profound and that sensitization had no bearing on the event. The patient in Case 5, for example, was presumably infected once only, yet by day 9 exhibited a greater response compared with day 50 PI (12,037 versus 9,430 cpm, respectively) for Case 2, as measured in our RAST assay. Further controlled laboratory experimentation is necessary in order to address this issue.

The reinfection of a patient certainly demonstrates that some individuals have difficulty breaking ingrained habits. This patient was well-educated and, following her first infection, received counseling on the disease and its mode of transmission. Knowledge of the disease allowed her to evaluate the risk, risks which she subsequently took and eventually suffered the consequences. Clearly, eradication of seafood-transmitted parasitic diseases in the U.S. solely by means of public education will be a formidable task.

Six of the cases in Hawaii occurred as a result of meals prepared at home. This is predictable because of the amount of seafood consumed at home, lack of awareness by consumers of the risks of infection and the difficulty with observing juvenile worms in the fish's flesh. We found, for example, that careful dissection and "candling" of a fillet was not effective in removing all worms. Subsequent digestion in our laboratory usually yielded additional nematodes.

All cases of anisakiasis in Hawaii, however, did not result from home-prepared meals. A local sushi bar has been linked to the transmission in Case 4 (Table 1)[24]. Commercially-prepared products in Hawaii also may serve as conveyances of parasites. For example, 5 1-pint containers of the commercially-prepared lomi lomi salmon were purchased from a major supermarket chain in Hawaii; on examination, two living nematodes and numerous worm fragments of juvenile *Anisakis simplex* were recovered[9].

### Other seafood-associated nematode infection

One other marine nematode from a fish has infected persons in Hawaii. In that case, an adult philometrid nematode infected a fisherman while he was filleting a fish[25]. This accidental infection probably could not have occurred had the fisherman not had an open cut or lesion on his hand. As he filleted the infected fish (papio, jackfish), contact between the marine nematode and the broken skin must have occurred. The worm had penetrated 25 mm into the patient's hand within 3 hours; a 1.1 cm portion of this nematode protruded from the lesion. Surgical removal was necessary.

### Prevention and education

Such parasitic helminths are extremely sensitive to temperature extremes. The heat from thorough cooking or adequate freezing will kill the worms in the fish tissues. Obviously, there are instances where cooking a product is not desired. The FDA, therefore, released an interpretation (Part 6; Chapter 01; No. 2-403) in 1987 which suggests that finfishes, bivalve mollusks (scallops), gastropods (abalone), cephalopods (octopus and squids), and crustaceans (lobsters and crabs) that are not cooked throughout to 140°F (60°C) or above, must be blast-frozen to -31°F (-35°C) or below for 15 hours[11] or regularly frozen to -10°F (-23°C) or below for 7 days[26] before sale or serving in ready-to-eat form. Clams, mussels and oysters are specifically excluded from this ruling because of existing controls imposed by states under the provisions of the National Shellfish Sanitation Program. Juvenile worms may survive certain industrial- and home-processing regimens involving marinating, brining, or cold-smoking.

The United States is not the only country to require freezing as a means of increasing the consumers margin of safety in seafood zoonoses. The Netherlands established legislative regulations in 1967 which mandated that fresh herring should be frozen to at least -20°C for 24 hours before being released to the public. These regulations, known as "The Green Herring Laws," have resulted in the disappearance of human anisakiasis from The Netherlands. According to the World Health Organization, prior to these regulations, that country had 300 cases per annum[12]. The European Economic Community (EEC) in 1988 considered a draft regulation requiring freezing of fishes similar to the one in The Netherlands[1]. Japan has no freezing regulations or policy with regard to pre-

vention of anisakiasis; however, it is common practice in Japan to freeze Pacific salmon in order to kill the potentially invasive worms[1].

Despite the evident success of freezing regulations as demonstrated in other countries, this does not convince everyone. The Hawaii Seafood Promotion Committee (HSPC), for example, initiated a campaign to protest the FDA's suggestion that all fishes intended to be served raw or partially-cooked should be frozen. The HSPC acknowledged the possible health risks associated with the raw consumption of some fishes, such as Pacific salmon and Pacific rockfishes, and conceded that the freezing of these fishes may be prudent, but it asserted that freezing of tuna is not necessary. It believes tuna is "safe to eat raw" and states that tuna has never been implicated in the transmission of anisakiasis. The patient in Case 3 (Table 1) could take exception to this statement.

A seafood connection with parasitic diseases in Hawaii clearly has been established and clinicians and physicians need to become more aware of this association. The risk of people in Hawaii becoming infected with these parasites from seafood products are extremely low; however, this risk increases slightly if imported fresh fishes raw or partially cooked are eaten. Prevention of these diseases, therefore, is probably best accomplished by providing continuous, accurate, and responsible information to the public concerning the health risks of eating raw fishery products; by advising the seafood industry of potential problems and methods of addressing them properly; and by promoting awareness within the medical community.

Education of these groups must be continuous for at least two reasons. First, as demonstrated in our reinfection case, raw seafoods comprise a normal and irrevocable part of the diet for some individuals. These habits are ingrained and continual reenforcement of the risk appears to be necessary. Second, as we continue to exploit the abundance of species of ocean fishes and invertebrates as a food source, new marine parasites, some of which will be capable of infecting humans, will be encountered. Thus, the catch-of-the-future also may have within it a catch-22 situation.

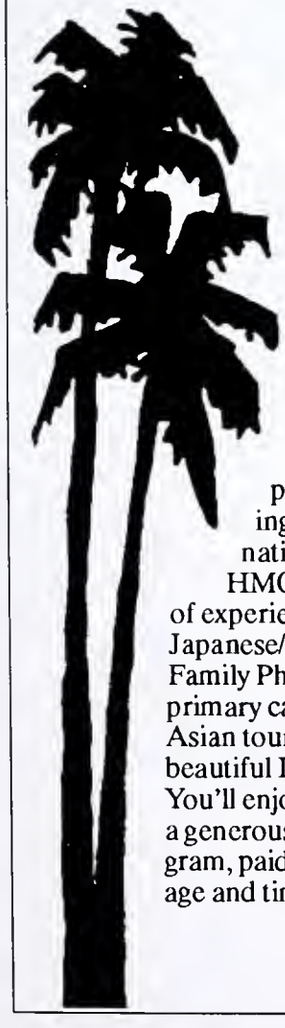
We suggest that anisakiasis be considered in the differential diagnosis of patients presenting with acute, sporadic, abdominal pain, especially if these patients have a recent history of eating raw or undercooked seafood products. Inquiring as to the recent eating habits of a patient may represent a critical consideration in achieving a correct diagnosis. Should anisakiasis or other parasitic disease be suspected, we would appreciate being contacted.

A portion of this work was supported by a grant from the National Institutes of Health (AI 19968) to SGK.

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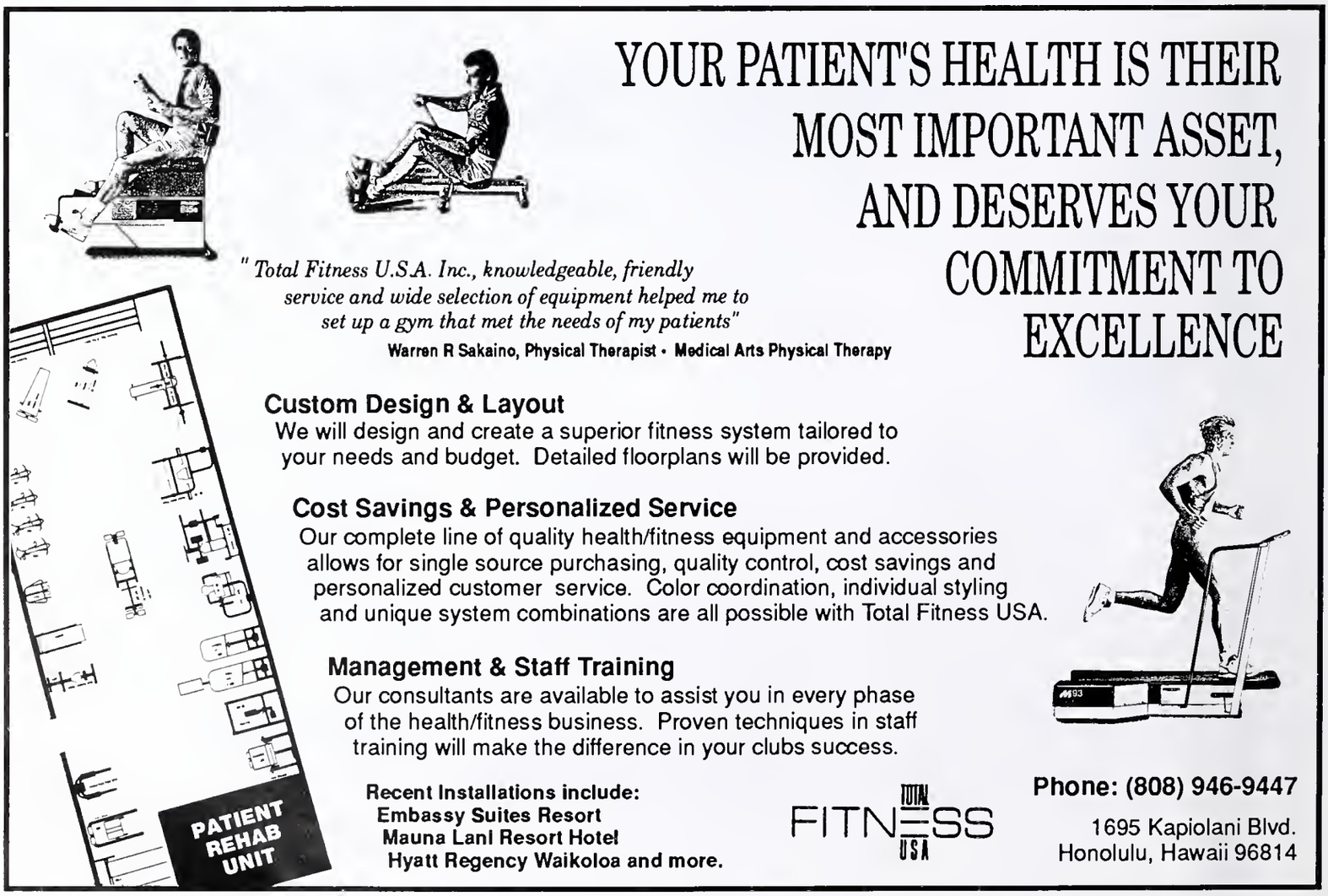
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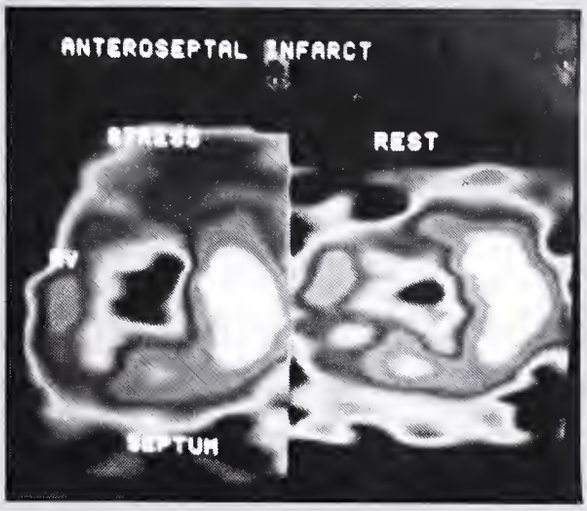


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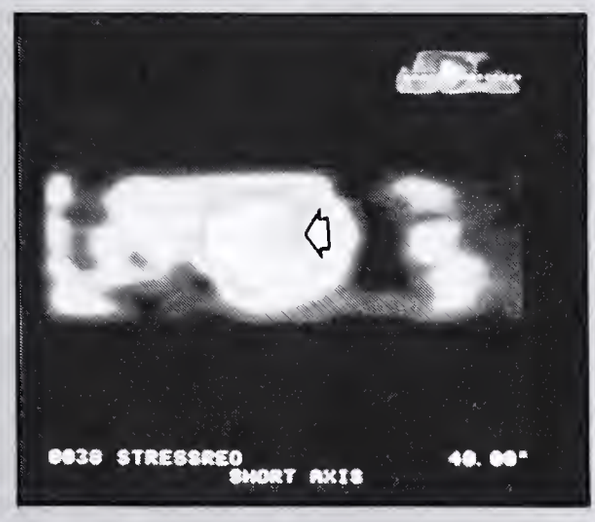
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# The health status of working women in Hawaii

Siman-Tov Halfon, MD, MPH*
Arthur M. Kodama, PhD, MPH**
William Arbeit, MPH***

*The effect of work on women's health was examined in this study by comparing selected health indicators and specific chronic conditions among employed men, employed women and housewives. The study analyzed data from the Hawaii Health Surveillance Program. The study group was comprised of 56,203 subjects and represented a randomly stratified sample of the population interviewed during the period 1981-1986. Housewives as a group were older, less educated and reported the lowest family income compared to employed men or employed women. The prevalence of several specific chronic conditions were higher among housewives than in employed men and employed women. Multiple regression analysis tested the difference in several health indicators (chronic conditions, hospital episodes and restricted activity days) between employed men, employed women and housewives, controlled for sociodemographic variables. The health status of housewives was clearly worse than that of employed men and employed women by all health indicators; employed women had more hospital episodes than employed men. The results suggest that mostly healthy women are selected for the labor force. Among employed women, those in poor health and needing hospital services more frequently, are probably at high risk of dropping out of work. Our study projects the importance of promoting occupational good health for employed women during their working life.*

* Department of Medical Ecology and Occupational Health
School of Public Health and Community Medicine
Hadassah Medical School
Hebrew University
Jerusalem, Israel

** Department of Public Health Sciences
Department of Public Health Sciences
School of Public Health
University of Hawaii
Honolulu, Hawaii

*** Health Surveillance Program
State Department of Health
Honolulu, Hawaii

Address correspondence to:
Dr. Arthur M. Kodama
University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822

## Introduction

During the last 5 decades, Hawaii has gone from a largely agricultural to a more diversified economy. The number of workers employed in agriculture has steadily declined while workers in manufacturing, trade, finance, business, professional services, etc. have increased[1]. In Hawaii, as elsewhere, the growing need for workers in less physical but more skilled jobs was followed by an increase in participation by women in the labor force.

The impact of employment on their health is not clear. Some earlier studies indicate a greater risk for coronary heart disease among women employed in clerical jobs[2], but other studies show no difference in the risk for coronary heart disease related to employment status[3]. It also has been stated there is both a delay in diagnosis and under-reporting of occupational disease in women[4].

In Hawaii, there is little information on the health status of employed women. Previous reports indicate the number of injuries and diseases in the State's working population but not separately for women[5]. The purpose of the present study was to separately examine selected health status indicators and the prevalence of specific chronic conditions among employed men, employed women and housewives.

## Methods

Data in the present study was collected during the period 1981-86 as part of the Hawaii Health Surveillance Program (HSP), an on-going, statewide health survey originally conceived in 1970.

A description of the survey method was published in 1986[6]. In brief, the survey sample represented the non-institutionalized resident population of the State of Hawaii. The sample was based on households excluding the areas of Kalawao County (Molokai Island) and Niihau Island. The HSP annually used a stratified systematic sample. Stratification during sampling was by geographical area. Sampling was systematic in that within each stratum a unique sampling interval was used. The sampling interval was selected according to the number of households in a given geographical area, in an attempt to equalize sampling errors and confidence levels among geographic strata. As a result, a higher percentage of subjects were interviewed in less populous areas in a given year than in more densely populated areas.

The HSP was modeled after the Health Interview Survey (HIS) of the National Center for Health Statistics. Many of the

concepts, definitions, questionnaire questions and procedures of the HSP were similar to those used by the HIS. The basic questionnaire had been in use since 1970. After several changes in occupational and industry classifications, the current version of the questionnaire has been in use since 1981.

Our study survey was conducted by personal interviews in the participants' homes. The interviewers were assigned, as much as possible, to study areas close to their own residences, mainly for economic reasons. In an attempt to minimize variations between interviews in the collection of data, the HSP staff monitored the interviewers' "no response" cases and reassigned eligible non-interviewed households to other staff people. The HSP staff also periodically conducted training programs for interviewers in an attempt to standardize their interviewing techniques. In order to avoid any seasonal variations, the interviews were equally divided into four seasonal periods, and in each season, by months. The overall response rate during the present 6-year study was 80%.

The employment status of the subjects in the current study was based on their responses to questions about their current activity. Those who responded that they were students, retired, disabled, or not employed were excluded from the present analysis. The housewives category was based solely on the respondent's declaration; it included both married and unmarried women. Occupation and industry were listed for both employed women and men according to the 1980 U.S. Bureau of Census "Classified Index of Occupation and Industries"[7]. These were regrouped into 16 occupation and 16 industry categories by the HSP for the purposes of analysis.

**Sociodemographic variables.**

There were 3 groups, classified by age: 29 years or less, 30-50 years and 51 years or more. This was done in order to compare specific chronic conditions in different age strata in the employed men, employed women and housewives.

Racial grouping had been done on the basis of the mother's race as reported by the participants, and classified into 9 groups: Caucasian, Japanese, Filipino, Hawaiian, Chinese, Black, Puerto Rican, Korean and Samoan[8]. However, for the purposes of our analysis, the last 3 groups were combined into "other minorities" because of the small number of participants. Marital status, education level and annual family income were recorded based on information provided by the participants during the interviews.

**Indicators of health**

The selected health indicators used in the analysis were defined as follows: "chronic conditions" included the number of reported chronic health conditions; "hospital episodes/year" was the second indicator and "restricted activity days/month" included the number of days/month a person had to cut down on his/her usual activities for the whole of that day because of illness or injury.

Specific chronic conditions were reported by the participants and classified into six major groups: diabetes, heart disease, hypertension, cerebrovascular disease, malignant neoplasm and (bronchial) asthma.

The analysis of the data consisted of (a) descriptive statistics of the socio-demographic variables and health indicators separately for employed men, employed women and housewives and (b) multiple regression analysis (MRA). Because of the potential for a confounding effect of sociodemographic and occupational variables on the association between health indicators and the 3 groups, (1) employed men vs. employed women, (2) employed women vs. housewives and (3) employed men vs. housewives, stepwise MRA was used for each indicator and each of the 3 groups separately. In each MRA, the group variable was introduced last in the order of independent variables, age, marital status, mother's race, educational level, family income and occupation, in an attempt to measure the net effect of the group variable. The F-test was computed as:

$$F = \frac{\varepsilon^2_{1-6} - \varepsilon^2_{1-5}}{Rm^2_{1-6}}$$

$\varepsilon^2_{1-6}$ = Sum of squares of all independent variables.

$\varepsilon^2_{1-5}$ = Sum of squares of 5 independent variables (without the group variable).

$Rm^2_{1-6}$ = Residual mean square.

In an attempt to estimate the size of the differences between the 3 groups, the percent difference was calculated for each health indicator and for each group separately as:

% Difference = B / Mean,
where,
B = Partial regression coefficient of the group variable in the MRA.
Mean = Unadjusted mean of health indicator for men (in the case of the group employed women vs. housewives, the mean for employed women).

A percentage greater than 15% was taken as having practical significance.

**Results**

The study group included 56,203 subjects, of which 29,632 (52.7%) were women and of them 20,296 (68.5%) were employed women; the rest were housewives. The proportion of employed women in the total labor force was 43.3%.

**Sociodemographic characteristics**

The mean age for employed men was 38.6 (SD, 13.4), for employed women, 38.2 (SD, 12.9) and for housewives, 45.5 (17.9) years. Figure 1 shows the similarity in the age distribution pattern of employed men and women, except in the older age group (95th percentile) where employed women relatively younger than employed men. Housewives were much older than employed men and employed women.

Table 1 shows a similar ethnic distribution among employed men and employed women. The major ethnic groups in the study were Caucasian and Japanese. Japanese

*(Continued)* ▶

Table 1

Percent Distribution of Selected Sociodemographic Characteristics Among Employed Men, Employed Women, and Housewives.

| | Total (n=56,203) | Employed Men (n=26,571) | Employed Women (n=20,296) | House-wives (n= 9,336) |
|---|---|---|---|---|
| MOTHER'S RACE | | | | |
| Caucasian | 33.5 | 33.0 | 29.1 | 34.0 |
| Japanese | 25.2 | 26.2 | 30.6 | 21.5 |
| Filipino | 14.5 | 14.3 | 15.3 | 13.4 |
| Hawaiian | 13.2 | 13.1 | 12.2 | 15.3 |
| Chinese | 4.8 | 4.7 | 5.1 | 4.7 |
| Black | 1.4 | 1.9 | 0.9 | 1.6 |
| Other minorities | 7.3 | 6.9 | 6.8 | 9.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| MARITAL STATUS (*) | | | | |
| Married | 67.6 | 66.2 | 63.9 | 79.7 |
| Widowed | 3.5 | 1.0 | 3.8 | 10.1 |
| Not Married | 29.0 | 32.8 | 32.3 | 10.1 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| EDUCATION (**) | | | | |
| Low | 15.4 | 12.9 | 11.6 | 30.8 |
| Middle | 76.7 | 77.8 | 78.7 | 67.1 |
| High | 7.9 | 9.3 | 8.7 | 2.1 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| FAMILY INCOME (***) | | | | |
| Low | 8.4 | 6.3 | 7.3 | 16.8 |
| Middle | 57.6 | 58.1 | 55.6 | 55.4 |
| High | 20.3 | 21.7 | 22.3 | 11.6 |
| Unknown | 13.7 | 13.9 | 14.8 | 16.2 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

* Not married includes divorced/separated, single (never married and common law marriages).
** Low education = 0-11 grades; middle education = high school, college and business/trade school; high education = graduate school.
*** Low income = < $10,000/year; middle income = $10,000 - $39,999/year; high income = > $40,000/year.

women made up the highest percentage (30.8%) of employed women, while Caucasians comprised the highest percentage (34%) of housewives. The housewives group included the highest percentage of married and widowed persons. Housewives also reported the lowest annual family incomes and had the lowest education levels.

Table 2 shows the prevalence of specific chronic conditions among the employed men, women and the housewives. The prevalence rate of the chronic conditions increased with increasing age in all groups (except for bronchial asthma). The prevalence of diabetes, heart disease, hypertension and bronchial asthma was higher in housewives than in employed men and women in all age groups. Employed women have a higher prevalence of bronchial asthma and malignant neoplasm than the men, whereas the men have a higher prevalence of hypertension than employed women. In the employed

Table 2

Prevalence of Specific Chronic Conditions Among Hawaii's Working Population by Age and Gender (Rates 1:1000)

| | 29 or less | 30-50 years | 51 or more |
|---|---|---|---|
| DIABETES | | | |
| Employed Men | 0.32 | 15.00 | 56.14 |
| Employed Women | 0.40 | 18.60 | 50.18 |
| Housewives | 0.44 | 25.07 | 97.13 |
| $\chi^2$ (2) | 1.73 | 12.36 *** | 84.08 *** |
| HEART DISEASE | | | |
| Employed Men | 3.80 | 10.42 | 50.53 |
| Employed Women | 5.34 | 10.29 | 31.89 |
| Housewives | 7.04 | 14.55 | 80.94 |
| $\chi^2$ (2) | 4.38 | 6.04 * | 44.46 *** |
| HYPERTENSION | | | |
| Employed Men | 13.56 | 71.73 | 238.25 |
| Employed Women | 7.85 | 68.76 | 201.58 |
| Housewives | 17.18 | 74.28 | 311.84 |
| $\chi^2$ (2) | 15.55 *** | 5.08 | 115.06 *** |
| CEREBROVASCULAR DISEASE | | | |
| Employed Men | 0.13 | 0.85 | 6.67 |
| Employed Women | 0.33 | 0.89 | 1.48 |
| Housewives | 0 | 1.85 | 10.08 |
| $\chi^2$ (2) | 1.28 | 2.78 | 24.52 *** |
| MALIGNANT NEOPLASM | | | |
| Employed Men | 0.51 | 3.80 | 13.18 |
| Employed Women | 1.33 | 6.83 | 14.09 |
| Housewives | 2.20 | 4.02 | 24.42 |
| $\chi^2$ (2) | 5.54 | 11.65 * | 19.33 *** |
| BRONCHIAL ASTHMA | | | |
| Employed Men | 30.42 | 22.86 | 20.70 |
| Employed Women | 45.41 | 35.32 | 27.69 |
| Housewives | 49.34 | 43.33 | 32.11 |
| $\chi^2$ (2) | 28.73 *** | 50.58 *** | 12.34 ** |

* $P < 0.05$
** $P < 0.01$
*** $P < 0.001$

population, the prevalence of diabetes and cerebrovascular disease was higher among women younger than the 30-50 year age group, but higher in the men in the older age group. Except in the younger age group, the prevalence of heart disease was higher among the men than in the employed women.

Table 3

Comparison of Chronic Conditions, Hospital Episodes/Year and Restricted Activity Days/Months in Employed Men, Employed Women and Housewives.

| | CHRONIC CONDITIONS | HOSPITAL EPISODES/YEAR | RESTRICTED ACTIVITY DAYS/MONTH |
|---|---|---|---|
| | Mean (S.E.) | Mean (S.E.) | Mean (S.E.) |
| (a) Employed Men | 0.74 (0.007) | 0.04 (0.002) | 0.95 (0.024) |
| (b) Employed Women | 0.79 (0.009) | 0.09 (0.002) | 1.00 (0.028) |
| (c) Housewives | 1.11 (0.017) | 0.17 (0.005) | 1.42 (0.051) |
| t-test | | | |
| (a)-(b) | - 3.77 *** | - 13.10 *** | - 1.19 |
| (b)-(c) | - 15.53 *** | - 14.31 *** | - 6.62 *** |
| (a)-(c) | - 18.53 *** | - 23.31 *** | - 7.56 *** |
| Multiple Regression Analysis | | | |
| F-test | | | |
| (a)vs(b) | 6.02 * | 66.54 *** | 2.03 |
| (b)vs(c) | 53.56 *** | 79.80 *** | 20.09 *** |
| (a)vs(c) | 32.42 *** | 185.63 *** | 9.60 *** |
| % Difference | | | |
| (a)-(b) | 4 | 85 | 6 |
| (b)-(c) | 18 | 76 | 26 |
| (a)-(c) | 14 | 300 | 19 |

* P < 0.05
** P < 0.01
*** P < 0.001

Among the younger age group (29 years or less), the differences in the prevalence of chronic conditions between the men, the employed women and the housewives were statistically significant only with respect to hypertension and bronchial asthma. In the 30-50 year age group, the differences were even more statistically significant; in the older age group (51 or over), all of the differences were statistically significant.

Table 3 provides a comparison of selected health indicators between employed men, employed women and housewives. The unadjusted data for chronic conditions, hospital episodes/year and restricted activity days/month showed that compared to the men, employed women have a higher mean incidence in all 3 health indicators. Housewives had even higher levels, indicating that they had the worst health status. The differences between the 3 groups were statistically significant, except for the difference in restricted activity days/month between the men and the employed women.

The results of the multiple regression analyses showed that, after controlling for sociodemographic variables, the significant differences in health indicators remained. When expressed as percent differences, the difference in chronic conditions between employed women and housewives was significant (18%), but that between the men and the employed women was not (4%). Striking differences were found in the use of hospital services, ie, the number of hospital episodes/year. There was a 76% difference between employed women and housewives and a 300% difference between employed men and housewives. There was also a large difference (85%) between the men and employed women in the number of hospital episodes/year. The percent differences in restricted activity days/month were small (6%) between employed men and women, but higher (26%) between employed women and housewives.

## Discussion

The present study detailed some important differences between employed women and housewives. Compared to the former, housewives were older, less educated, more married, more widowed and had lower family incomes. The number of women in Hawaii who are employed was similar to the proportion reported for the United States as a whole[3]. However, the women in the State who sought employment still tended to gravitate to the traditional "female" occupations. Nevertheless, there has been a trend toward getting into the professional fields, as in the case in most societies that have technologically advanced industries[9]. The overall growing number of women in the labor force is resulting in the need for more attention to the health status of women at work[10]. Ours is the first study in Hawaii comparing the health status of employed men, employed women and housewives.

The main finding of the study was that the employed women in Hawaii have better health status than housewives. The high prevalence of chronic health conditions found among housewives supported previous studies suggesting that healthy women tended to be in the labor force, while women in poor health remained at home as housewives[10,11]. The self-selection by healthy women plays an important role in the participation of women in the labor force[12]. In most of the specific chronic conditions considered in the present study, the prevalence rate was higher in housewives than among employed women or employed men. The health status indicators showed that employed women have fewer chronic conditions, hospital episodes/year and restricted activity days/month than housewives; this was similar to the results of other studies[3].

It is important to clarify the reasons for the apparent difference in health status between employed women and housewives. An earlier study suggested that the difference in health status may simply reflect a reporting problem. It has been suggested that the employed women, under-reported health problems so as not to jeopardize their jobs, whereas housewives over-reported their afflictions as justification for not having jobs. That same study, however, reported a positive correlation between reported health problems and deaths[13].

In the present study, the morbidity data on specific chronic conditions were consistent with selected health indicators, showing clearly that housewives have both higher chronic morbidity and worse health indicators than employed women. Of particular note is the higher utilization of hospital services by housewives than by female employees, which confirms the results of another study which indicated less use of physicians and hospital care by employed women as compared to housewives[3,12].

*(Continued)* ▶

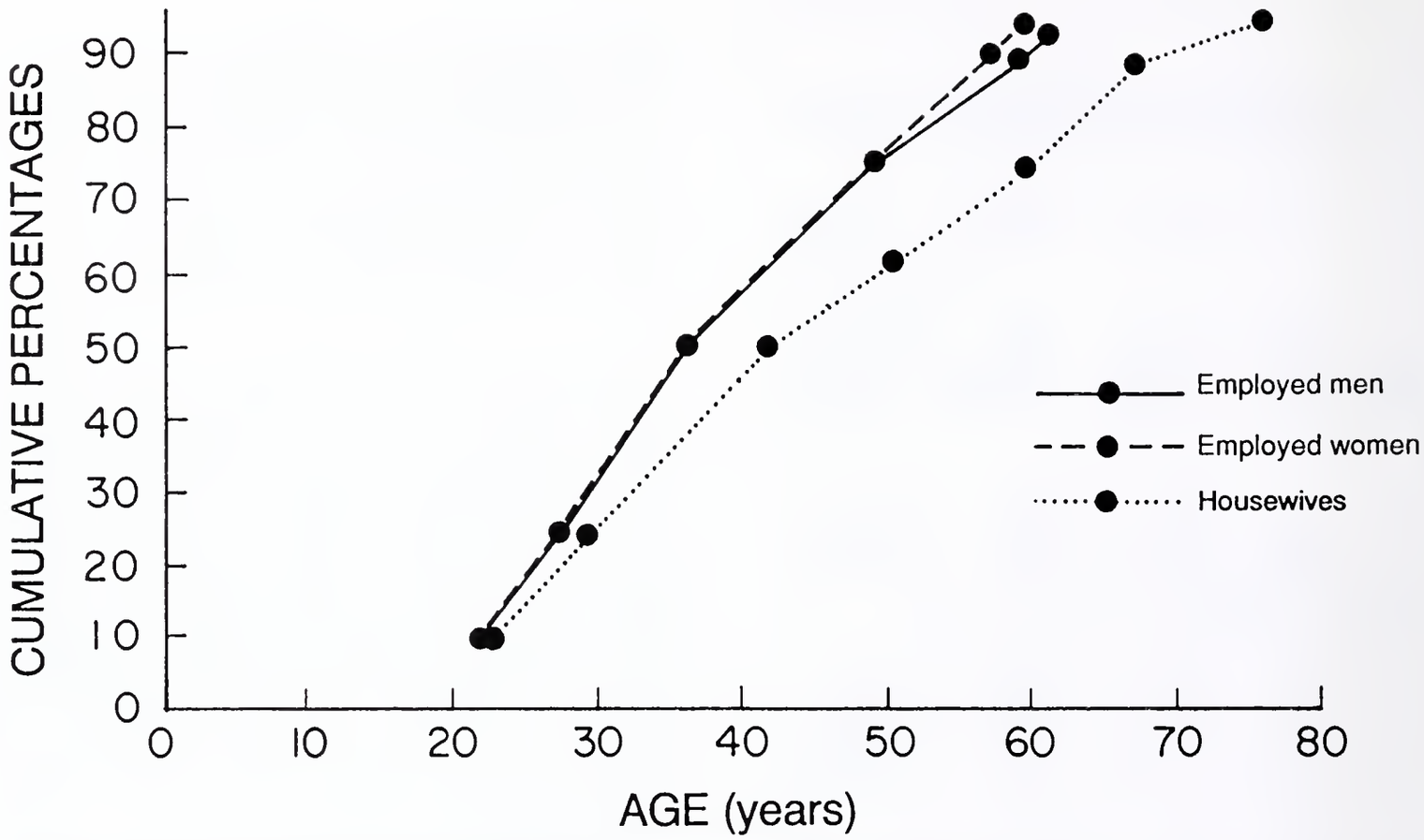
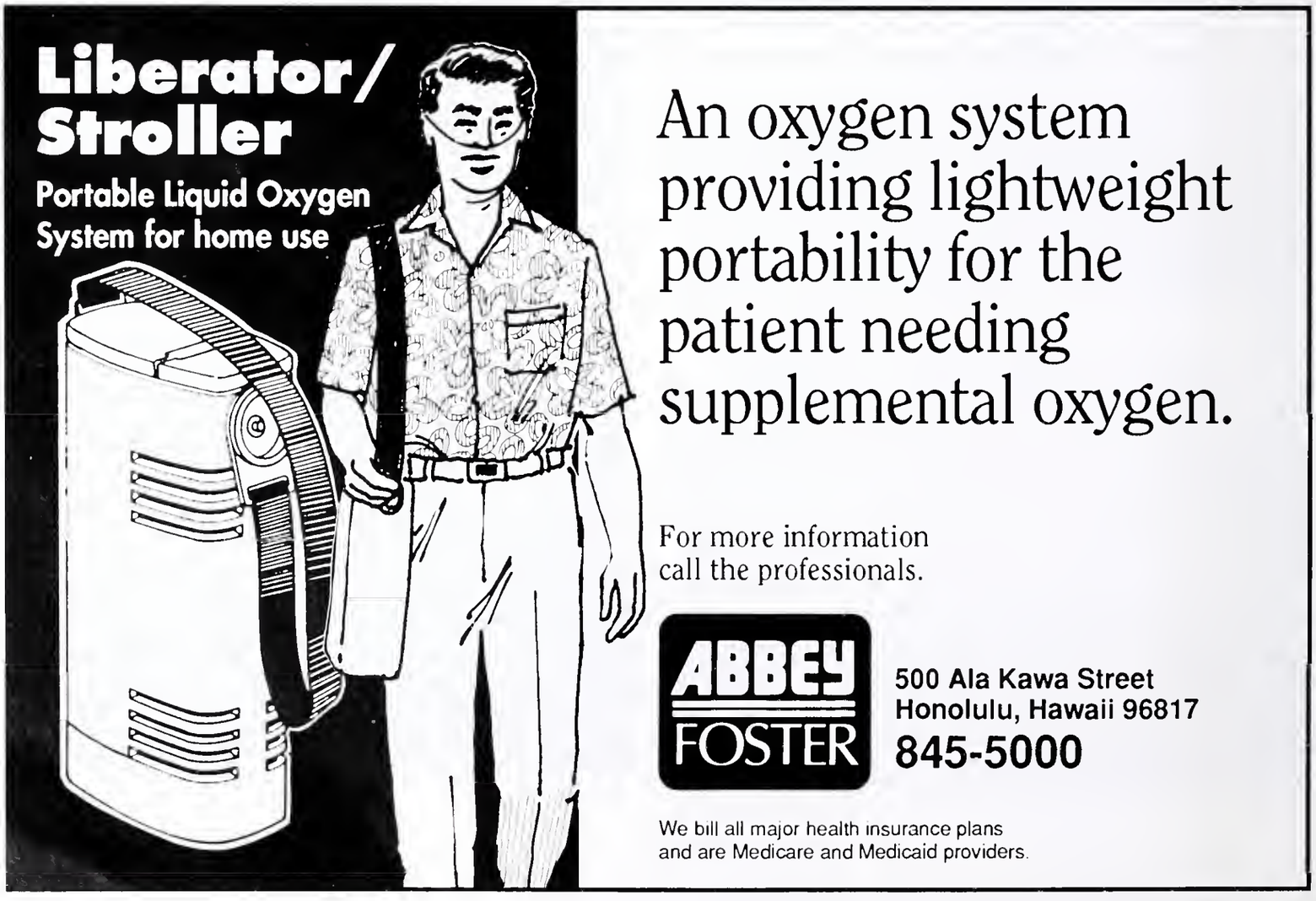



Figure 1: Age distribution of employed men, employed women and housewives.



The possibility of a genetic or physiological predisposition for a more active lifestyle among women employees has been discussed in the past. It has been suggested that a measure of this more active profile may be found in the higher serum level of high density lipoprotein (HDL) cholesterol; this has been reported as lowering the risk of coronary heart disease[14]. However, the results of the present study demonstrated that, in addition to the lower prevalence of coronary heart disease in employed women as compared to housewives, other chronic conditions not related to HDL-cholesterol were also less frequent, thus suggesting that other factors are involved.

The age distribution (Figure 1) showed an increased drop-out rate of employed women after the age of 50 years, which correlates with an increase in the percentage of housewives.

An important question to be addressed in future occupational health research is whether housewives are a select group because of family, social and physiological considerations or whether women also choose to be not employed because of the inappropriate working conditions and lack of adequate controls on exposure to hazardous materials at the job site. Maybe this leads to early retirement from work. One indication of the later in our study was the higher hospitalization-utilization by employed women as compared to employed men.

The challenge for providers of occupational health services will be to identify women who are employed, to be at higher risk for occupational morbidity, and to introduce primary and secondary intervention programs aimed at preventing early disemployment from the work force.

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■


# YOCON®
## YOHIMBINE HCl

**Description:** Yohimbine is a 3a-15a-20B-17a-hydroxy Yohimbine-16a-carboxylic acid methyl ester. The alkaloid is found in Rubaceae and related trees. Also in Rauwolfia Serpentina (L) Benth. Yohimbine is an indolalkylamine alkaloid with chemical similarity to reserpine. It is a crystalline powder, odorless. Each compressed tablet contains (1/12 gr.) 5.4 mg of Yohimbine Hydrochloride.

**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympathicolytic and mydriatric. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.[1,2] Also dizziness, headache, skin flushing reported when used orally.[1,3]

**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

**References:**

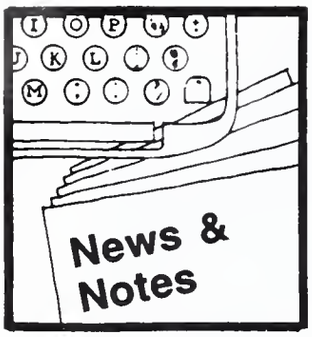
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HENRY YOKOYAMA, MD

## Requiem

Do not stand at my grave and weep
I am not there, I do not sleep
I am a thousand winds that blow
I am a diamond that glints on snow
I am the sunlight on the ripened grain
I am the gentle autumn rain
When you awaken in the morning hush
I am the sweep uplifting rush
Of silent birds in circled flight
I am the soft stars that shine at night
Do not stand at my grave and weep
I am not there . . . I did not die . . .

Anonymous (Sent in by Fuzzy)

## Obituaries in Brief

March: Former Honolulu GP Teru Togasaki, age 83 died March 19 in San Francisco.

July: Honolulu cardiologist Morton Berk, age 76 died July 12 at his home in Kaloku, Kona.

September: Honolulu ophthalmologist William J. Holmes, age 80, died September 20.

## Miscellany

"We're gonna beat Saddam Hussein by sending in a division of lady Marines with PMS... They'll be ferocious, unbeatable and best of all they'll retain fluid...

(Sez Bernard Fong, our favorite humorist)

* * *

"What does your father do?"
"Oh, he's a dentist."
"How about your dad?"
"He's an attorney."
"Honest?"
"No, just like the rest of them."

(As told by our tennis pro, Clay Benham)

* * *

"Have you heard of the cannibal who passed his mother in the jungle?"

(A one-liner by ENT man Walter Young)

## Incidental Intelligence

It has been estimated by serious researchers that one paper clip out of 4 winds up on some floor ... (Just Checking Lou Boyd 8/1/90)

Re *Snoring and Sleep Apnea:* More than half of all snorers over 60 have some degree of sleep apnea ... Uvulopalatopharngoplasty (UPPP) is 90% effective in curing snoring and 50 to 60% effective in curing sleep apnea ... UPPP is sometimes called 'glorified tonsillectomy' or 'throat lift' ... (Gleaned from Advertiser staff reporter Thomas Kaser's article)

Richard Pang, Kaiser ENT says, "Some of the people I've seen are like train wrecks because of sleep apnea ... They just can't function." Straub ENT Alfred Liu predicts that the surgery will become common as snorers and their sleeping companions realize they don't have to put up with the nighttime noise..."

Re *Treating Ukus* ... John Briley, Maui Medical Group pediatrician writes: "When one comes to paradise, one expects perfection ... What one does not expect is ukus, also known as 'head lice' in lay terms and in scientific vernacular, 'pediculosis extraordinaricus horribilicus' ... What is a mother to do when the child comes home from school with a terse note, 'Keep little uku head home until he's been treated.' This is my method ... You have to treat the whole household ... Those without symptoms use KWELL shampoo one time. The infested victim uses NIX creme rinse ... The following day, follow up on the infested individual with OVIDE TWO. This loosens the nits so you can comb them out with a fine tooth comb ... Spray area frequented by infested person with RID SPRAY..."

Re *Tooth abscess and Sinus Infection:* Question: "My dentist says my aching tooth is probably caused by a sinus infection." Answer: "Infection of teeth and sinuses are sometimes interconnected ... An aching tooth can be caused by an infection in and around the tooth, from a sinus infection near the tooth or from both sources..."

(The Whole Tooth by Martin Nweeia, DDS)

Re *Radon Gas:* "While cigarettes are the major cause of lung cancer in smokers, radon gas is believed to be the primary cause of lung cancer in non-smokers (and is believed to cause 20,000 deaths each year nationwide) ... Radon gas is released by deposits of granite, uranium shale and other minerals found in basement soil, under homes and in building materials ... The problem is limited here in Hawaii because we have no large deposits of these minerals..."

(Checkup on Health by Wes Young)

## Authors

We've long admired author-historian-cardiologist Jiro Nakano of Hilo whose earlier publications were "Samurai Missionary" and "Behind the Wire" (the latter a collection of translated poems written by internees during WWII) ... Jiro's most recent publication "Kona Echo" is a fascinating biography of a 19th century pioneer Kona physician, Harvey Saburo Hayashi ... The book title was the name of the outspoken Japanese language newspaper that Harvey published ... Harvey not only served the disadvantaged people of the day — the Japanese immigrant plantation worker, but also established a language school, mediated labor disputes for Kona coffee farmers, and even became a sugar planter in South Kohala...

## Honored

"The Hawaii Society of Internal Medicine (HSIM) received the Component Society of the Year Award for outstanding leadership and exemplary representation of internists and patients' concerns throughout the state. At a time when many physicians are growing increasingly frustrated by the administrative hassles of practice, HSIM has helped improve the practice environment of Hawaii physicians by working closely with state third party payers to eliminate carrier downcoding. HSIM has actively lobbied the State Legislature bills that would affect patient care, has worked closely with the state medical association on common legislative concerns, and has published a first-class newsletter that is consistently well written, interesting and informative."

## Honored, Elected & Appointed

Big Island: Rodney Ono chairs the Physicians Section of the Hawaii Island United Way ... Hilo pathologist Stephen Woo was named the American Cancer Society's Volunteer of the Year...

David Curb, professor of medicine and director of Research for the Division of Geriatric Medicine, John A. Burns School of Medicine was elected to the board of directors, Alzheimer's Association.

Max Botticelli, professor of medicine and director of the Queen Emma Clinic at QMC was guest speaker at the 8th annual dinner meeting of Hospice of Hilo in November...

## Physician Moves

August: Straub announced their newest physicians: Gary Johnson in geriatrics, Lynn Madanay in nuclear med, Robert Washecka in urology, Lisa Shigemura in pediatrics and Ronald Yanagihara in oncology...

Otolaryngologist Meredith Pang of Pang Ear Nose and Throat Clinic Inc relocated to Pali Momi Medical Bldg Ste 105; OB Gyn man Florentino Alabanza relocated his Kalihi office to the First Interstate Bank Plaza, 2153 N King St, Ste 110-A; and urologist Gary Lattimer joined William Yarbrough at the Queens Physician Office Bldg, Ste 1008 and Kailua Professional Center, 30 Aulike St, Ste 602...

September: Cardiologist Wesley Wakai joined his dad and fellow cardiologist Coolidge Wakai at 1010 S King St, Ste 110 and 321 N Kuakini St, Ste 801; internist Leon Garcia opened his office at Medical Plaza, St Francis Medical Center West; urologist James Dow is specializing in Andrology and male infertility and impotency at Century Square, Ste 912...

October: Ophthalmologist Steven Sameshima who finished a Harvard Fellowship in ophthalmic plastic and orbital surgery set up practice at 1319 Punahou St, Ste 1110...

November: Orthopod Jack Goldstein who specializes in orthopedic and reconstructive surgery of the shoulder and knee relocated to Queens POB, Ste 904 and Pali Momi Medical Center, Ste 480 ... OB Gyn man Ken Nakasone joined Natori, Teruya, Tanoue MD Inc at 2525 S King St, Ste 311...

## Entrepreneur

HMSA celebrated its 20th year as fiscal agent for Hawaii's federally funded Medicaid program ... In the fiscal year 1990, HMSA processed about 2 million claims totalling $214 million as benefits ... The program provides care for 63,000 needy families with dependent children, children in foster homes and qualified aged, blind and disabled persons ... It also serves 9,200 people eligible under the State's General Assistance Program...

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# Maka O Ka Kauka

Russell T. Stodd, MD

**If it isn't written down, it didn't happen.**

Some facts revealed in a seven year study of medical liability in New Jersey:

1. Cataract surgeons were significantly more likely to be sued for malpractice than ophthalmologists in general.

2. Half of the claims that were closed went against the physician with average payment to the plaintiff at $22,000. The range was $1,000 to $200,000, and that included four patients who died.

3. Eighty percent of indemnified cases involved negligent treatment, most alleged improperly performed surgery. Nineteen percent were due to negligent diagnosis, particularly endophthalmitis.

4. Interestingly, 60% of the money paid to patients resulted from complications before surgery began. This is consistent with what is seen in other specialties. Such claims included anesthesia complications, both local and general, globe performation, retinal detachment, and vitreous hemorrhage, improper use of mannitol, vocal cord damage, improper intubation, pneumothorax, and myocardial infarction.

Therefore, as always, document, document, document and provide informed consent. These are the most effective measures against malpractice litigation for cataract surgeons (and probably for other surgeons as well). When a complication occurs, document it, and what appropriate measures were taken, both to minimize the possibility of such complication, and to confront the problem.

**Blessed is he who expects no gratitude, for he shall not be disappointed.**

According to results of an 11-state survey of 4,500 registered voters, most Americans prefer a thoroughly trained ophthalmologist and a comprehensive eye examination over eye care from a nonphysician. More than 45% of respondents said a physician who can prescribe drugs and perform surgery was a key factor in their choice. Most of those surveyed would rather see an ophthalmologist even if it were twice the cost and the location was farther from their home.

**Any simple idea will be worded in the most complex way.**

At the University of Southern California School of Medicine, in a study of HIV positive patients with no apparent manifestations of the disease, 14 of 15 patients had abnormal saccadic tracking when compared with normals. Tests were conducted using infrared sensors aimed at the interface between iris and sclera with patients following images and dots on a screen. Supposedly, these findings indicate that CNS involvement occurs much earlier in the course of the disease than previously thought.

**Exceptions always outnumber rules.**

Choroidal melanoma continues to evade an established definitive treatment. While tumor size, location and cell types are important long term prognostic factors, evidence remains unconvincing that treatment is more beneficial than no treatment at all. Being therapeutic creatures, most physicians assume that treatment is beneficial. Most of the long term survival date for enucleation compared with proton beam treatment or plaque therapy with radioactive elements, provided about the same survival prospects. Perhaps the Scandinavian tumor registry where 99% of treated patients can be followed indefinitely will provide convincing information.

**If you want to get along, go along.**

Does your staff act cool or sullen toward you or another employee? Is the atmosphere always frantic and discordant? Does the office experience high turnover or absenteeism? Do patients complain about the way the staff are treating them? If just one of these questions is true, directly address the problem, because they indicate job dissatisfaction. And job dissatisfaction is very important in our island environment

where unemployment runs less than 3%. If you find good people to work with you, reward them with respect and dollars, and loyalty and contentment will prevail.

**Be it ever so humble . . .**

If the grass appears greener in other locales, consider that according to Northwestern National Life Insurance Co., Hawaii ranks fourth in the nation as a healthy place to live. Only Utah, Minnesota and New Hampshire are considered statistically healthier. The Aloha State ranks fifth in pleasant lifestyle, fifth in access to health care, first in proportion of population not disabled by injury or acute illness, second lowest in infant mortality. But, what the heck, we already knew that it's lucky you live Hawaii.

**The iron law of distribution — them that has, gets.**

If you wondered just who is doing well in the current medical expenditure maelstrom, consider these second quarter earnings reports:

Johnson and Johnson — sales rose 1.8%
Merck & Co. — sales rose 20%
Pfizer Inc. — sales increased 15%
Schering-Plough Co. — earnings increased 20%
Upjohn Co. — earnings rise of 21%
Bristol Myers Squibb — sales up 11%
Abbott Labs — sales up 14%
Eli Lilly and Co. — sales climbed 24%

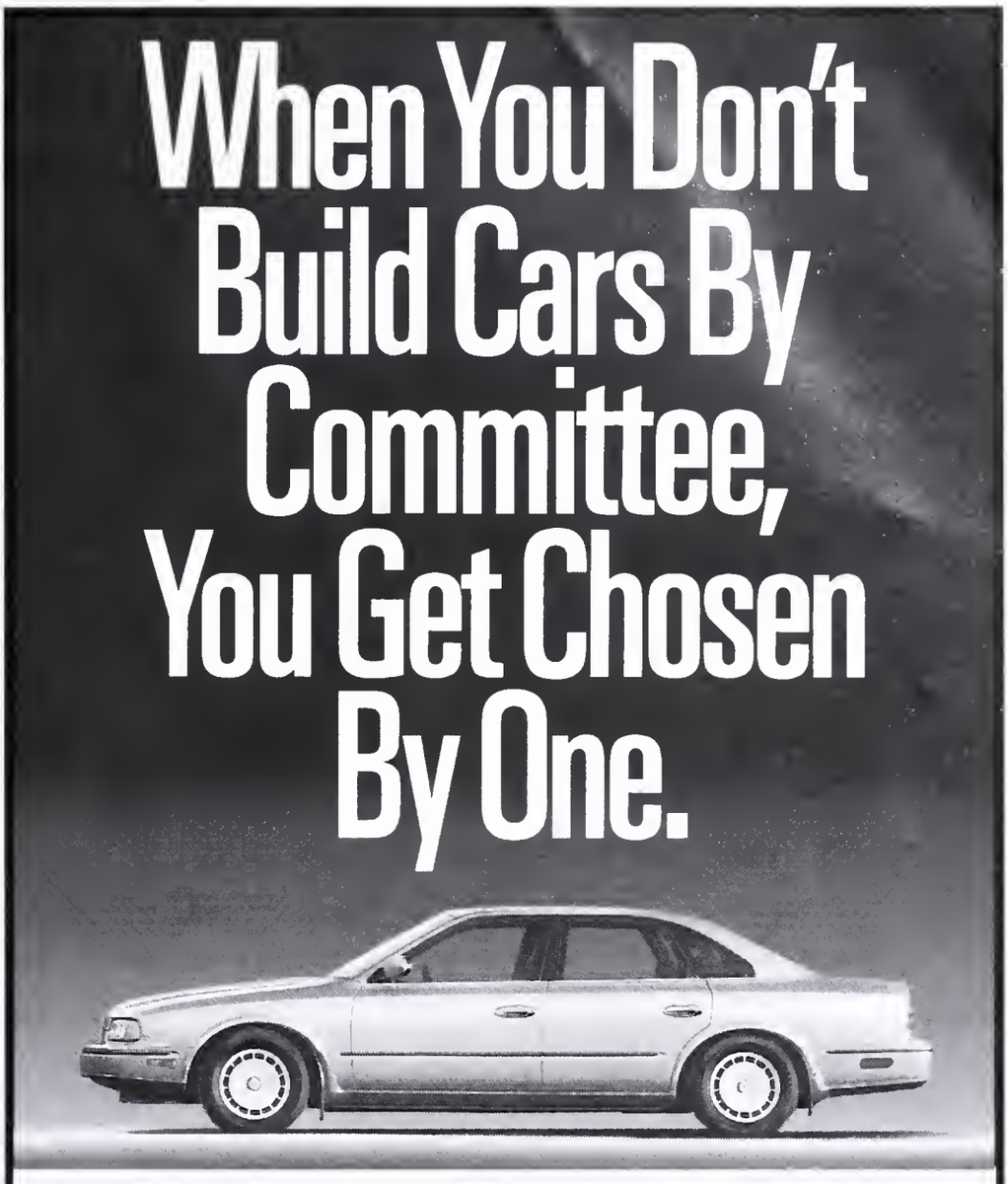
No wonder I feel embarrassed when patients tell me what they had to pay for my prescription for conjunctivitis or glaucoma or allergy. The pharmaceutical houses got the gold mine, while doctors are getting the shaft.

**To feel themselves in the presence of true greatness many men find it necessary only to be alone.**

Give super liberal Congressperson Fortney "Pete" Stark credit. His attacks on doctors know no limitations. He publicly stated, "Louis Sullivan (director of HHS) comes as close to being a disgrace to his profession and race as anybody I have seen in the Cabinet. The people who are going to suffer because of the policies Dr Sullivan had blindly accepted from the administration are

*(Continued on page 30)* ▶


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## Over the Editor's Desk

S. Kalani Brady, MD

**REGINALD HO, MD, NAMED NATIONAL CHAIRMAN OF ACS MEDICAL AND SCIENTIFIC EXECUTIVE COMMITTEE —** Reginald Ho, MD, an oncologist at Straub Clinic & Hospital has been elected national chairman of the medical and scientific executive committee of the American Cancer Society.

Ho has been an American Cancer Society volunteer for many years at both the local and national levels. He is a past president of the Hawaii Pacific Division.

The American Cancer Society, headquartered in Atlanta, has local offices throughout the country. Hawaii Pacific Division officers, are located in Honolulu, Aiea, Kailua, Kona, Hilo, Wailuku, Lihue, Guam, and American Samoa. These unit offices provide free services to cancer patients, hold continuing education seminars for medical professionals, provide cancer education materials and classes for the general public, and raise funds on a geographic basis. Besides funding basic services locally, monies raised help fund cancer research nationwide and in Hawaii.

**EAST INDIAN FOLK MEDICINES FOUND TO CONTAIN HIGH LEVELS OF LEAD, ARSENIC —** Folk remedies used by East Indian practitioners may contain dangerous levels of lead, arsenic and other toxic substances, says a report in JAMA. In a letter to the editor, M. D. McElvaine, DVM, MPH, of the Centers for Disease Control, Atlanta, Ga., and colleagues, report the case of a 41-year-old white woman from Seattle who presented to her physician with gastrointestinal complaints. Subsequent laboratory tests confirmed the woman was

*(Continued)* ▶

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**NEWS AND NOTES** *(Continued from page 28)*

suffering from lead poisoning. She had no history of occupational lead exposure, nor was her cookware leaching lead. She admitted taking "several East Indian herbal preparations she had received from an Indian practitioner with a degree not recognized in the United States," report the authors. After analysis the pills were found to contain 6 percent lead, 70 percent mercury and high levels of arsenic, gold, and cadmium. The woman's condition improved dramatically after discontinuing the pills. The authors then analyzed similar pills obtained in three Indian cities; all were found to contain high levels of heavy metals and toxic substances. Physicians should be aware that patients who have toxic levels of lead but no apparent history of exposure may have been using folk medicines, conclude the authors.

**INCIDENCE OF NON-A, NON-B HEPATITIS STABLE BUT SIGNIFICANT** — One quarter of all cases of acute viral hepatitis may be Non-A, Non-B hepatitis, according to a study in JAMA. "With an average reported incidence of 7 cases per 100,000, NANB [Non-A, Non-B] hepatitis represents a significant disease load, especially considering that 50 percent or more of these patients may develop chronic liver disease, irrespective of their source of infection," writes Miriam J. Alter, PhD, of Hepatitis Branch, Division of Viral and Rickettsial Diseases, Centers for Disease Control, Atlanta, Ga., with colleagues. While the incidence of NANB hepatitis remained relatively stable, averaging 7.1 cases per 100,000 population over the course of the study, there were "significant changes in disease transmission patterns," the authors write.

"The proportion of patients with a history of blood transfusion declined from 17 percent to six percent, but the portion with a history of parenteral drug use increased from 21 percent to 42 percent," they write. The portion of patients with histories of sexual exposure, household exposure, occupational exposure or hemodialysis did not change over time. In an effort to contribute to strategies to prevent NANB hepatitis, the authors examined its relationship to hepatitis C virus. "Antibody to hepatitis C virus was found in 45 percent of patients within six weeks of onset of illness and in 68 percent of patients followed up for at least six months," the authors found. "This study indicates that HCV [hepatitis C virus] is responsible for the majority of NANB hepatitis in the United States," the authors write. "Most cases are not associated with blood transfusion, but only half have a defined parenteral exposure. Further definition of the role of sexual transmission and inapparent sources of infection is needed to develop preventive measures that will have an impact on disease outside of the transfusion setting."

**MAKA O KA KAUKA** *(Continued from page 27)*

going to be the minorities. Dr Sullivan has no credibility." No passive patsy, Dr Sullivan replied, "It's too bad ultra-liberals like Pete Stark haven't progressed to the point where they can accept the independent thinking of a black man who does not conform to their own stereotyped views." Four days later Stark wrote a letter of apology which Dr Sullivan accepted, and then considered the matter closed.

**Addenda —**

— More ophthalmologists utilize management consultants than any other specialty group.

— In black Americans between the ages of 45 and 65, the prevalence of glaucoma is 15 times that of whites in the same age group.

— Not a single case of transmission of HIV infection in the course of ophthalmic practice has been reported.

— In Santa Clara, California, the judge added six months to 300 lb. David Brown's two year burglary sentence after Brown reacted to the sentence by dropping his pants and mooning the judge.

Aloha, and keep the faith,

rts

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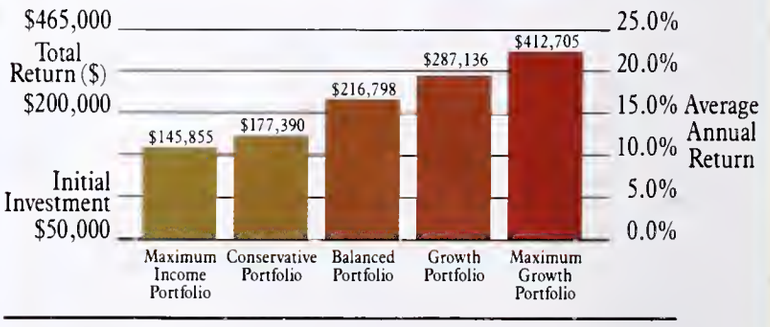
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# Hawaii Medical Journal

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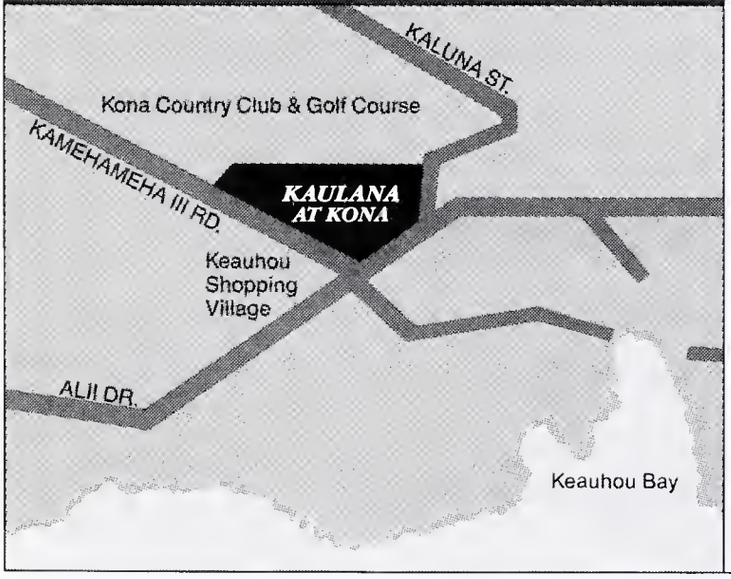
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# The Robert T Wong MD Lectureship

Who could have predicted that on the day that war broke out in the Middle East, the annual Lectureship at the UH School of Medicine, followed by a gathering of Town & Gown for renewed convivial acquaintanceship and refreshments in the pleasant courtyard of the "Pagoda", took place?

Perhaps I should have said it the other way around: Who could have guessed that on the day we listened to an authority on the cutting edge of research in the treatment of dread cancer affecting the peoples of the world over, an atavistic way of resorting to war in order to settle a political issue was anything but dormant in this "advanced", modern, technologically sophisticated world of ours?

Is the human brain so saturated with trivia that the populace cannot now differentiate the good from the bad? The worthwhile from the nonsensical?

The steeply sloping auditorium of B-103 was peppered with a scattering of some 50 people when the last person came in. Dean Chris Gulbrandsen MD had approached the podium promptly at 4:00 PM, after escorting the speaker Hilary Koprowski MD and his wife to their front row seats in front of him, our venerable but still young Bob Wong following after. This was just a little over an hour after the allied coalition's warplanes had taken off from the airfields surrounding Iraq and Kuwait, to attack the latter's principal targets at 0400 in the dark of night where the Star of Bethlehem once shone.

Surely all in the sparse audience had been listening to their car radios as they drove up to park. What else, in a time of instant worldwide CNN news?

As I got out of my 13 y/o VW Rabbit plastered with anti-nuclear war stickers, a driver passing by headed for the exit, slowed to ask me if I had heard. On my affirmative, he shouted: "Aren't you going to the protest march at the State Capitol?" as he sped off. I wondered if all the would-be audience was fleeing as well; or were they glued to their radios instead in order to hear the brief words of our country's President due to come over the airwaves barely over an hour after the hostilities had started?

It took an understandably long while for Chris to introduce Dr Koprowski; the latter's credentials must have filled several pages. In brief, he is the Director of the Wistar Institute and Professor of Microbiology at the University of Pennsylvania, a world-renowned virologist and pioneer in developing monoclonal antibodies for the detection and treatment of cancer.

It was natural to expect a clone of Einstein to speak to us. He was so steeped in the complete knowledge of his particular subject — his topic was: *Clone to Clinic: Conceptual Approaches to the Immunotherapy of Cancer* — that the petty niceties of the use of the microphone and the microscopic printing of the tables in his slides projected on the huge screen escaped his attention. Still, we were able to follow — somewhat blindfolded — the development of his thesis. At least I, felt that at my level of a kindergartener, the professor in the clouds over my head revealed himself clearly but fleetingly, often enough to be followed. My mind would drift at times, not inappropriately, to what I had heard on the radio, as an outreach observer stationed in Baghdad described the passing of an F-16E in the clouds overhead, invisible except for his seeing/hearing the trailing screech and thunder; he couldn't tell which of his senses registered the impact.

Never mind the stupid war; let's listen for the prophetic knowledge that is opening the door to a cure for cancer !

My notes tell me: That Domagk, the inventor of Sulfanilamide (1932)*, injected himself with cancerous tissue extracts from cadavers in order to determine if an antigen would form — to no avail. He didn't die of cancer either; ironically, he died of a bacterial infection, the organism resistant to Sulfanilamide, no less!

Forty years of research, in which Koprowski participated, with inoculum finally resulted in 20% of response and development of a cancer antigen, working with a virus — the Vaccinia Melanoma lysate. Through a complicated method of cloning cancer antigens, a monoclonal antibody injected intravenously did result in a partial remission in the cancer patient, despite the fact that most of the patients were terminal and had had all the chemo- and radio-therapy prescribed previously.

Other data from the occasional patient who recovered from cancer revealed that even in the absence of all detectable metastases, the bone marrow will often harbor cancer cells. The serum of recovered patients may be cytotoxic to cancer cells, Koprowski postulated. A single infusion i.v. of the monoclonal anti-anti-antibody (Ab3) results in no cancer cells being found in the bone marrow. However, if a patient develops an antibody on his own, he fares better. The purpose of immunotherapy is to stimulate the patient's own formation of antibody.

In the laboratory, using material from viruses, bacteria and yeast organisms, the monoclonal antibodies are cultivated and treated step by step from Abl to Ab2 to Ab3, Ab3 being the same as the Abl that is made by a patient (what I didn't understand, or hear, or grasp, was that something takes 258 days or most of a year: is it the in-vitro, or what happens in the patient who recovers as a result of developing his own antibodies ?).

*(Continued)* ▶

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Koprowski's conclusion is that he visualizes the development in the not too distant future of vaccines against cancers, as a result of the cloning process. Research needs to be done — it hasn't been done yet — on patients who have recovered from cancer, of which there are more than we realize. Interestingly, many of these antigens are common to several different cancers.

We were enjoying a brief respite from listening to the car radio for the latest, over-repetitive, speculative reporting by the multimedia. The respite was extended by staying and chatting with colleagues and with Bob.

We need to tell our readers that the Robert T Wong lectureship was funded originally by Mrs Jean Wong, nee Chow, now deceased, but survived by her husband Vernon Wong of Bethesda, Maryland, in honor of Bob Wong.

"The lectureship brings to Hawaii gifted individuals": Drs Gallo in 1985, Lansing in 1986, Rosenberg in 1987 and Broder in 1989, "who have made major contributions in medicine. The intent is to cross-fertilize research ideas and new medical findings for the betterment of people in the Pacific Basin and throughout Southeast Asia."

This is our own Bob Wong's baby; we hope it will continue because it does contribute to the betterment of our knowledge of medicine here in Hawaii. We also express a hope that by its continuance, Hawaii will be adding its very small voice for the evolution of peoples who can gradually beeome more eivilized, to the extent that wars will be eliminated and peaeeful pursuits prevail.

* We learned of a coineidence: in 1942, Bob Wong submitted his thesis toward the requirements for the degree of Master of Medical Science for graduate work in ophthalmology at the University of Pennsylvania. The title of his thesis was Chemotherapy in the Treatment of Gonorrheal Ophthalmia subtitled: Relative effeetiveness of Sulfanilamide, Sulfapyridine and Sulfathiazole.

16 January 1991

J.I.Frederick Reppun MD,
Editor

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# What is AMA-ERF?

The American Medical Association-Education and Research Foundation is the major philanthropy of organized medicine. It was established over 40 years ago by the AMA to help assure quality medical education and to assist in research in the nation's medical schools. As the cost of medical education continues to increase and sources for funding dwindle, support from the medical community is vital to ensure that future physicians receive the best educational and research opportunities. To date more than $51 million in gifts have been distributed to medical schools through the Foundation.

A major factor in the success of AMA-ERF has been the involvement of the AMA Auxiliary, its state and component local auxiliaries. Through many different fund-raising efforts, such as the holiday sharing card (contributors listed on one greeting card mailed to all physicians in the community), dinners, raffles and sales of items, contributions to the Foundation have grown substantially. Through the AMA Auxiliary, yearly contributions have averaged over $1 million, and in 1990, reached $2 million.

Contributions to AMA-ERF can benefit the medical school of one's choice and can be designated to one of four funds. Donations to the Medical School Excellence Fund are unrestricted, which allows the medical school to use the money where it is needed most. The Medical Students' Assistance Fund helps students pay educational costs either through loans, grants or scholarships. The Development Fund supports pilot and experimental health and medieal programs. The Categorical Fund supports researeh in specifie areas.

Why give to AMA-ERF rather than donate directly to a ehosen medical school?

Giving through AMA-ERF maximizes individual contributions. The eontributions of many donors combined are significant sums that make a difference to the medical school. Larger sums of moncy are generated when the medical auxiliaries are involved because of promoting fund-raisers, as well as the personal contact Auxilians make with potential donors.

The Auxiliaries also establish personal contact with deans of medical schools to ensure accountability for the contributions. Greater awarcness is promoted by the Auxiliaries for the need for quality medical education. When physicians and their spouses combine their efforts to raise funds for medical schools, they demonstrate the support of the entire medieal community.

If physicians are already making contributions direetly to the medical sehools of their choiee, these can be designated "Special Handling" when made through AMA-ERF.

For information on making contributions through AMA-ERF, contact AMAA National Committee member or Hawaii ERF-Chairman Edith Don (Dr. Andrew Don), 21 Alokele Place, Pukalani, Maui, Hawaii 96768, Ph. 572-1107.

Edith Don
Guest editor

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# Jeffrey M. Nakamura MD
# 1949-1991

The *Journal* deeply regrets the passing of this young Kuakini physician, internist, hematologist and researcher; he was in the prime of his life.

Jeff contributed greatly not only to the practice of his chosen specialty, but also to the teaching of medical students and resident house officers in the programs of the John A. Burns School of Medicine of the University of Hawaii. He was often a contributor to the scientific articles published in the *Journal,* modestly listing himself after the names of these students and residents who did the research and the writing under his direction. His presence and his contribution to medicine will be sorely missed.

We reprint herewith his obituary that appeared in the Honolulu Advertiser of 10 January 1991.

The *Journal* offers its sincere condolences to Dr Nakamura's family.

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## Jeffrey Nakamura, Kuakini doctor, 42

Dr. Jeffrey M. Nakamura, who sought to prolong the lives of others by medical treatment and pioneering research, died here January 3, 1991, at the age of 42.

Nakamura, a specialist in disorders of the blood and in cancer, a physician at Kuakini Medical Center and an associate professor at the University of Hawaii School of Medicine, was the principal researcher in a study of HTLV-1, the human T-cell leukemia virus.

He was instrumental in getting the Hawaii Blood Bank to screen for the virus, which is often found in people from southern Japan.

Born in Honolulu and graduated from Punahou, Nakamura returned to the state in 1981 after receiving his bachelor's degree from Reed College, a medical degree from New York University of Medicine, internship and residency at Yale University Medical School, and a fellowship at University of Washington School of Medicine.

He was an entrepreneur in biotechnology investments, product development and desktop publishing, a tennis and bridge enthusiast, a devotee of dance, and an art collector.

He died unexpectedly of a ruptured aneurysm.

Nakamura is survived by his wife, Joyce; his mother, Mrs. Shigeyo Ogata Nakamura; and a brother, Barry.

Contributions may be made to the Jeffrey M. Nakamura Memorial Fund for medical research and support of physicians in training.

## Council Capers

# December 7, 1990

**Touchy - Touchy** . . . I have had numerous requests to resume this column so here goes. Please understand that every word is the expression of the author and is not the official position of the HMA.

**Day of Infamy** . . . On December 7, 1941, I was a little boy living in Nuuanu Valley on Oahu and have vivid memories of that day. If memory serves me right, a group of physicians was gathered for a Sunday meeting at the Mabel Smyth Auditorium that fateful morning, and they were then mobilized to Pearl Harbor.

**Back to the Present** . . . The HMA Council met on Friday, December 7. After a sumptuous Japanese buffet dinner, President John McDonnell called the meeting to order.

**Ho-Ho-Ho...Ho-Ho-Ho** . . . As reported to you in the November 1990 HMA Newsletter, the HMA is diligently working on your behalf with HMSA regarding certain proposed changes in reimbursement. Believe me, much is being done regarding this matter. Hopefully by the time this reaches you a favorable solution will be reached.

**Maui No Ka Oi** . . . The HMA Secretary, our own Andy Don, reported that approximately 65% of the practicing physicians in Hawaii belong to the HMA. Maui County has the highest percentage of physician members, ie, 65% whereas the other counties totalled 50-60%.

**Prime Time** . . . It was motioned/s/p to send a letter to President Bush and Health Secretary Louis Sullivan denouncing the actions of Inspector General Kusserow, who had established a "merit pay/bounty system" for sanctioning physicians under Medicare, which "plainly deprived" them of their constitutional rights to due process of law.

**Good News** . . . A successful Distinguished Medical Awards Dinner was held on November 16, 1990 at the Ala Moana Hotel, with proceeds going to the Cancer Research Center of Hawaii.

**Tip Of The Month** . . . When visiting Maui, try the cream puffs from Komoda's Bakery in Makawao; almost as good as the Long Johns at Napoleon's Bakery.

Denis J. Fu, MD
Councillor from Maui

# Address to the House of Delegates 134th Annual Scientific Meeting Hawaii Medical Association

John J. Ring, MD
President-Elect
American Medical Association

Friday, October 12, 1990
The Ilikai Hotel, Honolulu, Hawaii

Aloha Awakea Ou Kou. Good afternoon to all of you.

On Sunday I will be talking to you about policy issues, but today I want to talk to you for just a few minutes about the heart and soul of why you are gathered here as a House of Delegates; about the real reason for electing and installing officers to lead this Association; and about the deepest purpose of the Association which I represent.That heart, that reason, that purpose is our professionalism. And I come here this morning from the Mainland to warn you that our professionalism is being threatened.

Now threats are nothing new to us. We're used to them. Threats like government regulation, professional liability suits, and hassles by third party concurrent reviews. But this one is different, and more subtle, and more dangerous. Because it strikes at the very heart of who we are and what we are. And it is driven by people who for one reason or another — but principally economic — want to see medicine reduced to the status of a mere trade, a business venture, a public utility.

To do this, they must somehow de-professionalize medicine. Or at least, they must reduce the profession of medicine to a level where much — or all — of the respect we now enjoy is gone. How many times can we hear ourselves called vendors before we start acting like vendors? How many times can we hear ourselves called providers before we start thinking that's all we are? How many times can we hear ourselves encouraged to become competing entrepreneurs before we regard ourselves as only that?

What is at stake here is the issue of freedom: our professional freedom and our very professionalism itself. And I want to tell you why professionalism is so important, why it's at stake right now and what you can do about it.

Professionalism has three elements:

First, a profession has a body of knowledge which each professional must master and which the profession as a whole must update and which all members of the profession share freely with fellow professionals.

Second, a profession sets a standard of behavior or ethics greater than that of a trade — ethics, if you will. And it develops a mechanism for self-regulation and policing to see that those standards are met.

Third, at the heart of it, professionalism is based on a special — and in medicine's case — an almost sacred relationship between the professional and each person that professional serves. This is a relationship between a burden-bearer and one who shares that burden. And in medicine this professional relationship is especially profound.

Two of the most important words in medicine — the word 'patient' and the word 'compassion' come from the same Latin root word — the verb "patior" meaning "to bear a burden." So that the patient is one who bears a burden. And the truly compassionate physician is one who shares that burden — lifting it when possible and making it lighter — lightening it when that is all that can be done, but always caring. This burden-bearing, this burden-sharing, has always been the hallmark of the medical profession.

To put this unique quality of our profession into concrete terms, I think of the little girl whose father sent her to pick up some bread at the grocery store. The little girl was gone much too long and just when her dad was getting worried, she came into the house — bread in hand. Her father asked her where she'd been for so long. She told him one of the neighbor kids had broken his tricycle and the reason she was late was that she had stopped to help him. Her dad looked at her in amazement and commented, "I didn't know you knew anything about fixing tricycles." "Oh, I don't," she said. "I just sat down and helped him cry!"

That ability to help our patients cry — to help them bear their burdens by sharing those burdens with them is an important and unique part of the doctor-patient relationship.

Because curing patients brings a joy and satisfaction like no other. It is the burden-sharing, the compassionate human connection, that has always made medicine such a wonderful fulfilling profession!

So our professionalism is to us doctors our very identity as doctors. And that is why when our professionalism is attacked we must fight! And, let me tell you, this is one fight we're not going to lose! It's not going to be easy, but from doctors in their offices all around America to the President of the American Medical Association we're going to pull together to preserve this great and noble profession!

Let me tell you what the American Medical Association is doing to lead American doctors in this fight. First, to preserve and build the body of medical knowledge. The AMA is the world's largest publisher of scientific and medical information, and it will remain so.

Since its founding in 1847, the AMA has been instrumental in setting standards for medical education. And the Association continues its role in upgrading public health and ensuring high standards of medical care. Further, the AMA is taking the lead in making sure vital and responsible animal research is allowed to continue — so that medical knowledge can continue to expand.

Second, the AMA leads in activities to encourage and enhance ethical behavior in our profession. From its beginnings, the AMA has been active in developing and refining statutes to make examinations and licensure mandatory for those who would practice our profession. The AMA has been a leader in professional self-regulation.

And on another ethical front, you can always count on the AMA's Council on Ethical and Judicial Affairs, thoughtfully and thoroughly to update ethical standards for areas of professional conduct — such as confidentiality, patient referrals, withholding or withdrawing of life-prolonging medical treatment. Al though representatives of the Federal Trade Commission have said on numerous occasions that physicians are entrepreneurs and that medical practice is a mere business, the AMA has always affirmed that our ethical responsibility — which is at the very heart of our professional oath — is to our patients, not to ourselves, not to our government and certainly not the bottom line!

This brings me to what the AMA is doing to protect the vital, unique sacrosanct doctor-patient relationship. Nothing is more important to the AMA than this. We foster it every chance we get. In fact, whenever I'm asked to tell the purpose of the American Medical Association, I always say that our mission is to help doctors be better doctors and to help people be healthier people. The two jobs are entwined. And everything we do to help doctors be better professionals has a direct, positive benefit for patients as well.

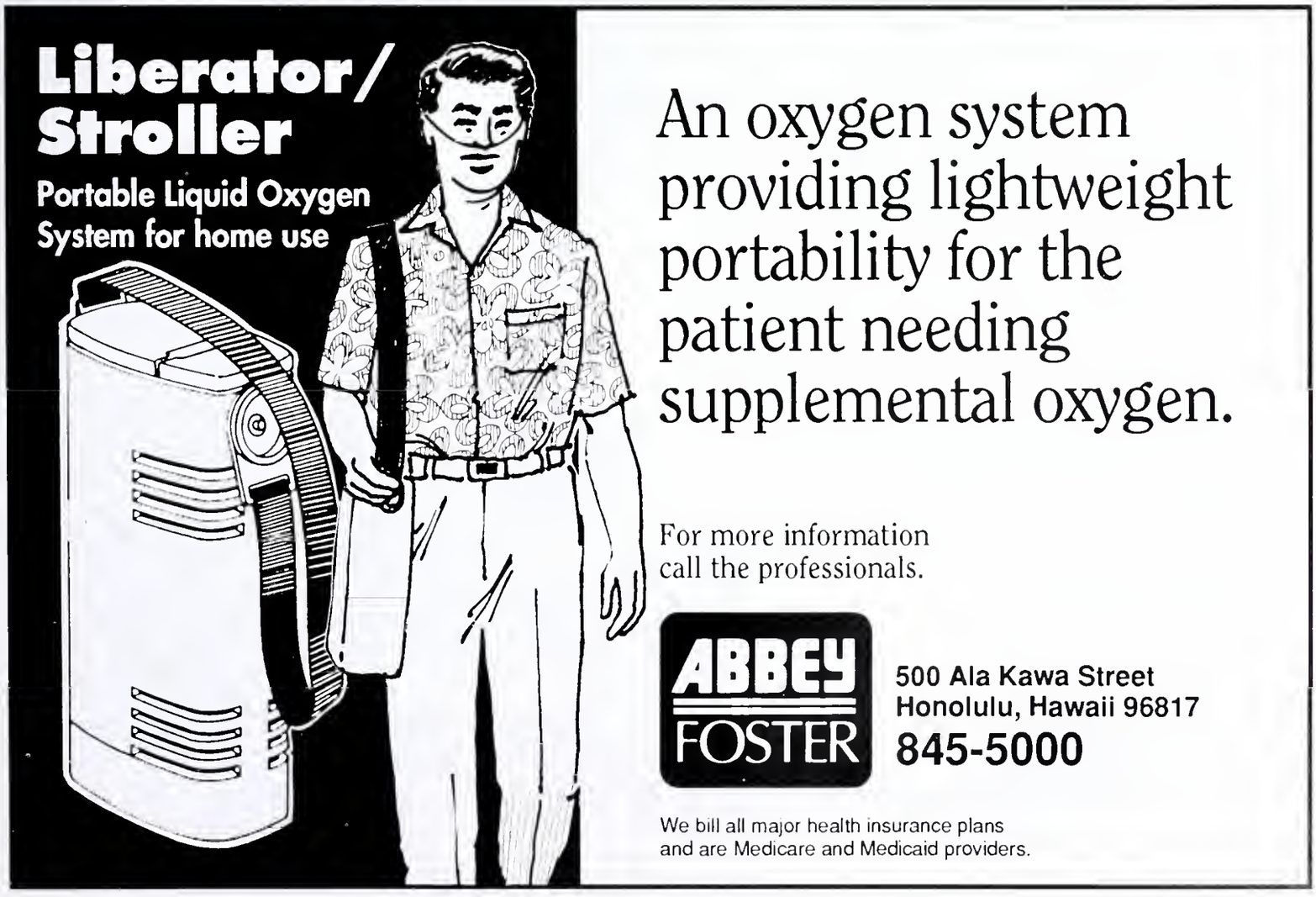
That is why I am here to tell you that the most important thing you can do to preserve professionalism is to do what you've always done: put your patient's first. Second, stay active in organized medicine. One physician alone can do very little. But if you join with other individual physicians in organized medicine, then your voice can — and will — be heard.

And finally, what can you do to preserve professionalism? Perhaps most importantly, you can be aware that there are folks out there who'd like to see professionalism disappear from the medical scene. And that there are competitive pressures on us that could tend to diminish our professionalism.

But we're not going to let it happen! We're going to fight to maintain our professionalism. And we're going to win this one.

You know why? Because of people like you and you and you!

Thank you.

# Traumatic spinal cord injury in Hawaii

Deborah A. Goebert, MS*
Millie Y. Ng, MS**
Joyce M. Varney, Dr PH***
David A. Sheetz, MD****

*As a prelude to continuing surveillance in Hawaii, a 2-year retrospective study (1987-1989) was conducted by the Pacific Basin Rehabilitation Research & Training Center (PBRRTC) and the Rehabilitation Hospital of the Pacific (REHAB) in order to examine the frequency and causes of traumatic spinal cord injury (SCI) at REHAB; determine similarities and differences when compared to national statistics and make recommendations for future study. Data were abstracted from patient records at REHAB. During the period of study, 59 persons were treated for SCI. Similar to the national database, 85% were males and 70% were teenagers and young adults. Motor Vehicle Accidents (MVAs) contributed to 38% of the injuries followed by falls (28%), sports (19%) and violence (16%); however, etiology differed according to age. Sixty-two percent of the lesions were cervical. Almost 50% were neurologically complete. Sixty-six percent were in wheelchairs. Over 50% were independent in mobility and feeding and nearly 40% were independent in bathing and dressing. Eighty-eight percent returned to their homes. In general, the case at REHAB did not differ from the national database. Because reporting has not been mandatory, actual SCI incidence in Hawaii is most likely higher. Information derived from a mandatory reporting system would lead to identification of high risk groups, development and evaluation of prevention programs, identification of patients requiring early intervention and rehabilitation, and better planning of health care services.*

## Introduction

Each year, an estimated 10,000 new cases of SCI occur in the United States. Estimates of the incidence of acute traumatic SCI in the United States range between 28-55 injuries per million persons per year[1,2]. A recent study conducted by the Paralysis Society of America[3] estimates that the SCI prevalence rate is 721 cases per million, and that there are approximately 177,000 spinal cord injured persons living in the United States today. One study estimated the prevalence of SCI to be as high as 500,000 Americans[4]. The incidence and prevalence of SCI in Hawaii are not known.

National statistics also indicate that persons between the ages of 15 and 35 are at the highest risk for sustaining an injury to the spinal cord. Traumatic injuries are the leading cause of death in the adolescent age group and the leading cause of potential loss of productive years of life[5]. The impact of these sudden injuries can be devastating to the victims, their families and society as a whole. In addition to the physical disabilities, injured persons and their families are faced with social, emotional, financial and vocational problems. Direct medical costs of these injuries to the federal government are well over $4 billion per year. Lost earnings associated with SCI are estimated at $3.6 billion[1].

Since most SCI is preventable, information available on incidence, causes, hospitalization and outcome measures would be beneficial for the medical community as a whole. The collection of needed information on all causes of SCI (gunshot wounds, stabbings, falls, sports activities such as diving, football, dirt-bike riding, etc) continues to be fragmented at best.

The Rehabilitation Hospital of the Pacific, the only acute comprehensive rehabilitation hospital with a Spinal Cord Injury Program serving the Hawaiian Islands and the Pacific Basin (American Samoa, Guam, Common Wealth of the Northern Marianas, Republic of the Marshall Islands, Federated States of Micronesia, and Republic of Belau), collaborated with the Pacific Basin Rehabilitation Research & Training Center, John A. Burns School of Medicine, University of Hawaii at Manoa (PBRRTC) to initiate a formal study to collect data on patients with SCI.

Our study was intended to: (a) examine the frequency and causes of SCI in Hawaii, specifically at REHAB; (b) compare REHAB cases and the national statistics in demographics, causes and the outcome rehabilitation; and (c) make recommendations for further studies in this area.

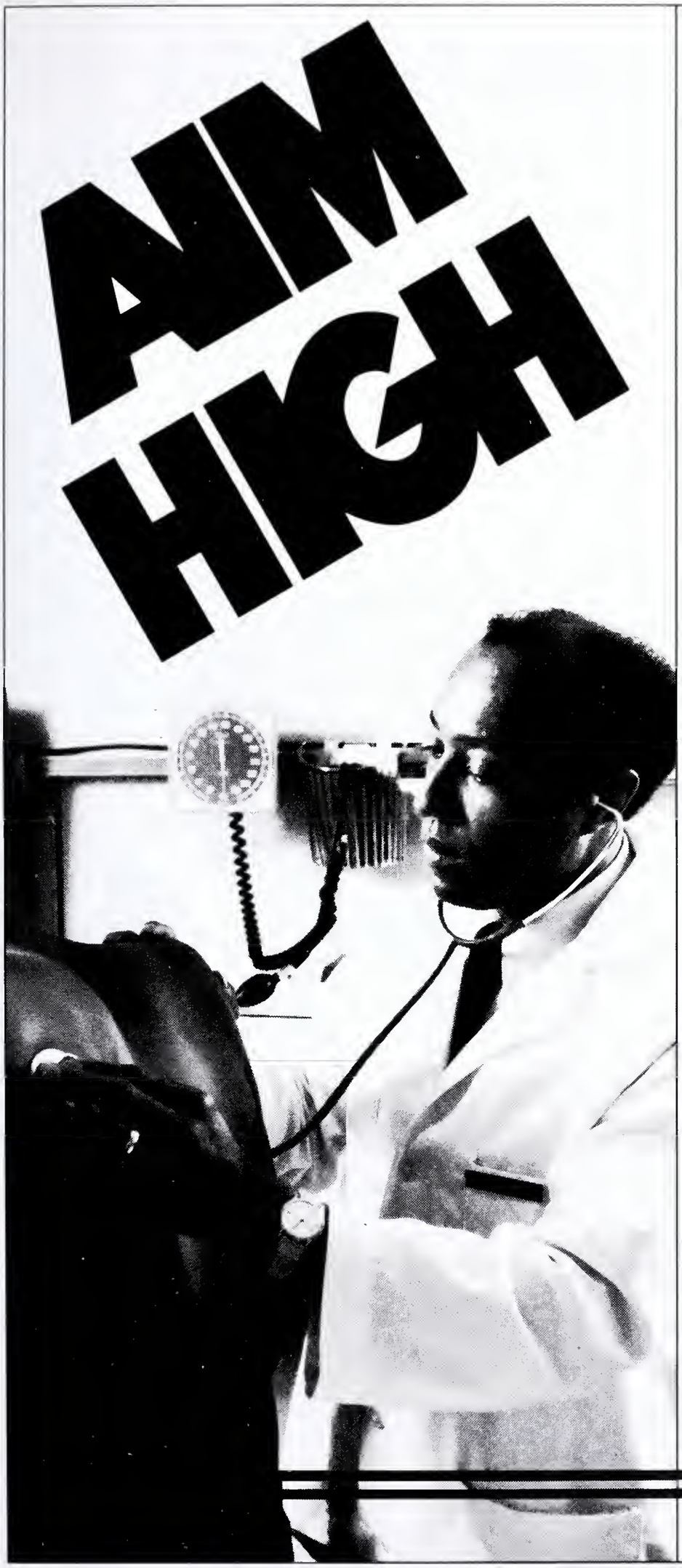
## Methods

The national database registry developed by the University of Alabama at Birmingham was selected for data collection as

(Continued) ▶

* Research Specialist
Pacific Basin Rehabilitation Research & Training Center
University of Hawaii, John A. Burns School of Medicine
** Trauma Rehabilitation Program Manager
Rehabilitation Hospital of the Pacific
*** Director of Research
Pacific Basin Rehabilitation Research & Training Center
University of Hawaii, John A. Burns School of Medicine
**** Medical Director
Spinal Cord Injury Program
Rehabilitation Hospital of the Pacific

Reprint requests to:
Deborah A. Goebert, MS
Pacific Basin Rehabilitation Research & Training Center
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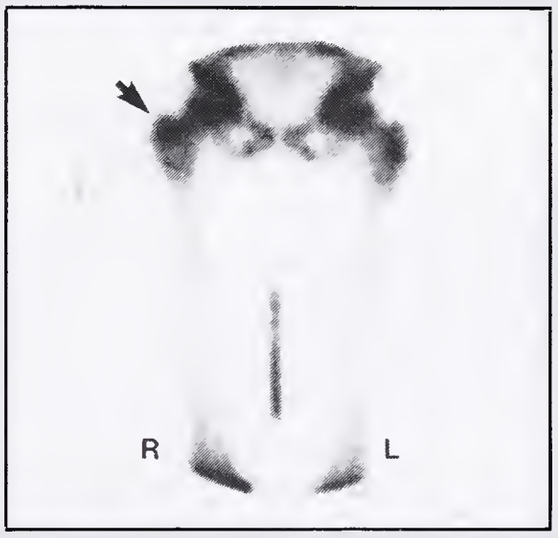
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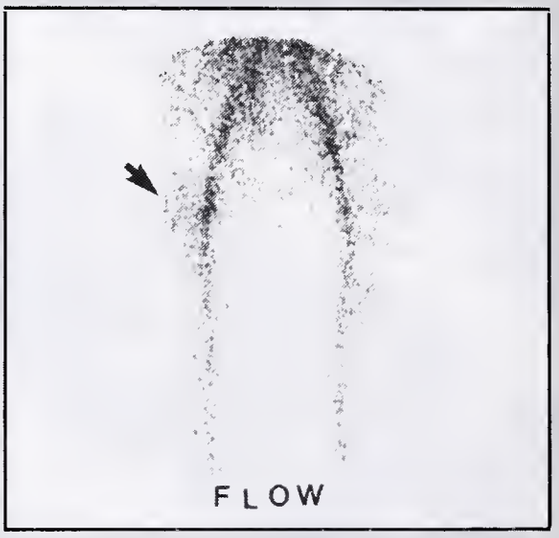
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# Nuclear Medicine Teaching File

## THREE PHASE BONE SCANNING IN OSTEOMYELITIS



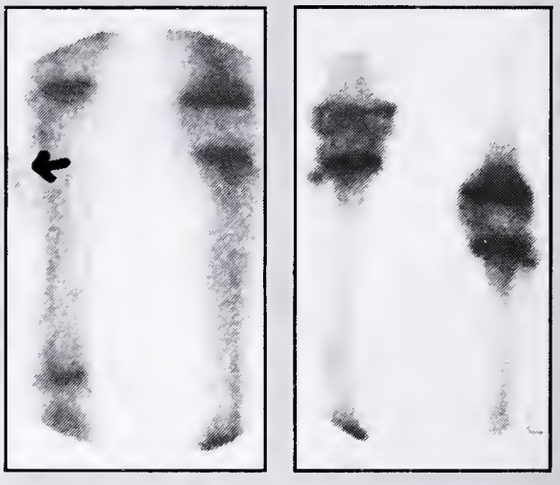

1. "Standard" bone image made 4 hours after injection (3rd phase) shows increased tracer localization in the right greater trochanter of an 8 year old with fever and hip pain. Is this osteomyelitis, tumor, fracture, etc.?




2. A single image from this patient's radionuclide angiogram or "flow study" (first phase) was taken from 12 to 16 seconds after injection and shows focally increased blood flow to the region of the right greater trochanter.




3. This patient's "blood pool" image, made from 1 to 2 minutes after injection (second phase) shows corresponding hyperemia. The early findings raise the specificity for osteomyelitis from roughly 75% to 95%, with no loss of the bone scan's exquisite sensitivity.




4. A 9 year old with soft tissue abscess below the knee is referred to rule out osteomyelitis. A: "Blood pool" image shows focal hyperemia superficially located. B: Delayed bone image shows no evidence of osteomyelitis. Diagnosis: soft tissue abscess without osteomyelitis.


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the most appropriate registry currently in use. Our data were abstracted from REHAB patient records of persons with SCI admitted during a 2-year period from October 1, 1987 to September 30, 1989.

A registered nurse was trained in the collection of data. In medical records where classification of preserved neurological function was in question, the SCI medical director, a physiatrist, was consulted. Data were then entered into a computer and verified. Descriptive statistics were used to analyze the data.

In addition, results were compared with national data reported in *Spinal Cord Injury: The Facts and Figures*[6]. This publication includes data from 17 model SCI regional systems throughout the United States and has data on 9,647 individuals. Chi square techniques were applied to determine whether differences existed in the frequencies observed and partitioning methods were used to identify the categories contributing to those differences.

## Results

Our study revealed that 59 persons with SCI had been treated at REHAB. Most of the injuries occurred in the Hawaiian Islands; only 4.8% of the injuries occurred in the Pacific Basin. Men were predominantly the ones injured (84.7%). The 5:1 male-to-female ratio observed at REHAB is within the range (from 3:1 to 8:1) reported by other investigators.

SCI occurred most frequently in the 16 to 30 year olds, ie the majority (44.8%). The mean age was 20.2 years. The distribution of SCI by age at REHAB and in the national database is shown in Table 1. There were no statistically significant differences between the two groups.

Figure 1 compares the ethnic distribution of REHAB SCI patients to the overall 1987 Hawaii population. Although it appears that Japanese were at lower risk, there is no statistically significant difference between the groups.

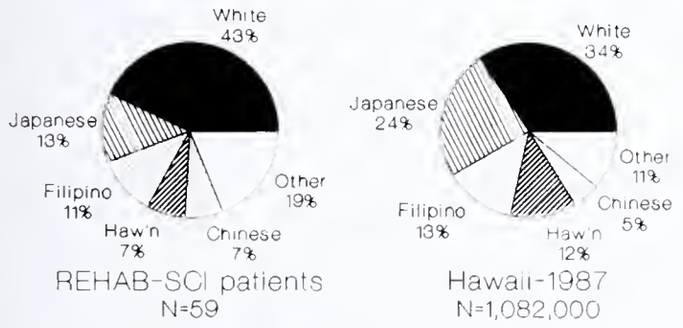
The national database classified the causes of SCI into five major categories: (a) Motor vehicle accidents (MVAs), (b) falls, (c) acts of violence, (d) recreational and sporting activities, and (e) other activities. Table 2 displays the distribution of SCI by etiology at REHAB and in the national database. It appears that REHAB had fewer MVA cases and more falls and sports injuries than nationally; however, there were no statistically significant differences between the two databases.

Automobile accidents accounted for the vast majority (81.1%) of MVAs, followed by motorcycle accidents (13.6%) and bicycle accidents (4.5%). Acts of violence included mostly gunshot wounds (67%). Person-to-person combat (22%) and stabbing (11%) accounted for the other violence-related injuries. The recreational injuries were primarily due to water-related activities. Sixty-four percent occurred while diving into water, and 9% while surfing (includes body surfing).

Age can be a factor in the etiology of SCI. In the age group 45 and older, falls were the leading cause of SCI, followed by MVAs. The causes of SCI in the 31 to 45 year age group were equally distributed between the 4 categories. More than half of the SCI occurring in the 16 to 30 age group was caused by MVAs, the remaining injuries distributed evenly in the remaining categories. Injuries to the under 15-year olds occurred almost exclusively during recreational sporting activities or were the result of falls.

The neurological level of the lesion most frequently observed at REHAB based on diagnosis at the time of discharge was the 5th cervical segment, followed by lesions at the 4th and 6th cervical segments. The next most frequently observed lesion was at the T4. Cervical lesions accounted for more than 60% of the injuries. Thoracic lesions accounted for approximately 29% and lumbar lesions accounted for a relatively low number of injuries (8.1%). The distribution of preserved neurological levels at REHAB and in the national database is shown in Table 3. There were no statistically significant differences between the two databases.

Figure 1. Comparison of Ethnic Distribution for Hawaii and SCI patients




| Age at Injury | REHAB N=59 | National N=9,647 |
|---|---|---|
| 0-15 years | 5.2% | 4.9% |
| 16-30 years | 44.8% | 61.1% |
| 31-45 years | 25.9% | 19.4% |
| 46-60 years | 12.1% | 9.2% |
| 61-90 years | 12.1% | 5.4% |

Table 1: Distribution of SCI by Age at Injury

| Etiology | REHAB N=59 | National N=9,647 |
|---|---|---|
| MVA | 37.9% | 47.7% |
| Violence | 15.5% | 14.6% |
| Sports | 19.0% | 14.2% |
| Falls | 27.6% | 20.8% |
| Other | 0% | 2.7% |

Table 2: Distribution of SCI by Etiology

*(Continued)* ▶

The American Spinal Cord Association (ASCA) adopted a classification scheme, the Frankel Grading System, to describe the neurological extent of injury. It consists of the following categories: A. Complete — all motor and sensory function is absent; B. Incomplete, preserved sensation only — preservation of any demonstrable, reproducible sensation — voluntary motor functions are absent; C. Incomplete, preserved motor non-functional — preservation of voluntary motor function which is minimal and performs no useful purpose; D. Incomplete, preserved motor functional — preservation of voluntary motor ability below the level of injury which is functional; E. Complete return of all motor and sensory function, but one may still have abnormal reflexes[7]. The distribution of SCI by Frankel Grades observed at REHAB were similar to those reported in the national database. At REHAB, half (50.8%) of the SCIs were neurologically complete (A) and one third (35.6%) were motor functional (D), whereas in the national database the distribution was 51.1% and 29.6% respectively.

**Outcome**

An important outcome of rehabilitation is the level of functional performance in mobility and self-care skills. Although this information was collected using the national database registry, at REHAB more specific information was obtained and recorded about the level of dependence in a variety of situations. These data are presented in Table 4. One-third of the patients were ambulatory (32.2%) and approximately two-thirds required the use of wheelchairs.

The distribution of SCI according to methods of urinary bladder management in the two databases is displayed in Table 5. The databases showed significant differences between the indwelling, intermittent catheterization program (ICP), condom and continent bladder management methods.

The average number of days SCI patients were hospitalized in prior acute care facilities was 28.6 days and ranged from 6 to 78 days. The average number of days at REHAB was 59.4 days. The range was from 5 to 199 days. Five of the patients spent an average of 23 days additionally in prior skilled nursing level and 2 of these had also spent an average of 7.5 days in intermediate care level.

In order to compare this data with the national database, which contains SCI systems, the number of days hospitalized in acute care must be combined with the number of days at

| Level Preserved | REHAB N=59 | National N=9,647 |
|---|---|---|
| High Quad (C1-4) | 16.2% | 16.5% |
| Low Quad (C5-8) | 45.9% | 36.75 |
| High Thoracic (T1-6) | 18.9% | 13.5% |
| Low Thoracic (T7-12) | 10.8% | 21.1% |
| Lumbar (L1-5) | 8.1% | 10.1% |

Table 3: Distribution of SCI by Level Preserved

| Bladder Management | REHAB N=59 | National N=9,647 |
|---|---|---|
| Indwelling | 0% | 16.6% |
| ICP | 57.6% | 30.1% |
| Condom | 8.5% | 21.7% |
| Suprapubic | 0% | 7.7% |
| Continent | 33.9% | 15.2% |
| Other | 0% | 8.7% |

Table 5: Distribution of SCI by Bladder Management

| | Function | | | | |
|---|---|---|---|---|---|
| Level | Bed Transfer | Mobility | Bathing | Dressing | Feeding |
| Total Dependence | 5.7% | 1.9% | 3.8% | 5.8% | 2.0% |
| Human Assistance | 15.4% | 11.5% | 32.7% | 42.3% | 31.4% |
| Supervision | 25.0% | 30.8% | 21.2% | 13.4% | 4.0% |
| Assistive Device | 28.8% | 40.4% | 40.4% | 38.5% | 27.4% |
| Independent | 25.0% | 15.4% | 1.9% | 0% | 37.3% |

Table 4: Distribution of SCI by Function

*(Continued)* ▶

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"Recent research has delineated early, more subtle changes in lung and immune functions. These alterations directly predispose smokers to respiratory tract infection."

*Am Fam Phys* 1987;36:133-140

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For respiratory tract infections due to susceptible strains of indicated organisms

**Brief Summary.**
**Consult the package literature for prescribing information.**
**Indication:** Lower respiratory infections, including pneumonia, caused by *Streptococcus pneumoniae, Haemophilus influenzae,* and *Streptococcus pyogenes* (group A β-hemolytic streptococci).
**Contraindication:** Known allergy to cephalosporins.
**Warnings:** CECLOR SHOULD BE ADMINISTERED CAUTIOUSLY TO PENICILLIN-SENSITIVE PATIENTS. PENICILLINS AND CEPHALOSPORINS SHOW PARTIAL CROSS-ALLERGENICITY. POSSIBLE REACTIONS INCLUDE ANAPHYLAXIS.

Administer cautiously to allergic patients.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics. It must be considered in differential diagnosis of antibiotic-associated diarrhea. Colon flora is altered by broad-spectrum antibiotic treatment, possibly resulting in antibiotic-associated colitis.

**Precautions:**
• Discontinue Ceclor in the event of allergic reactions to it.
• Prolonged use may result in overgrowth of non-susceptible organisms.
• Positive direct Coombs' tests have been reported during treatment with cephalosporins.
• Ceclor should be administered with caution in the presence of markedly impaired renal function. Although dosage adjustments in moderate to severe renal impairment are usually not required, careful clinical observation and laboratory studies should be made.
• Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.
• Safety and effectiveness have not been determined in pregnancy, lactation, and infants less than one month old. Ceclor penetrates mother's milk. Exercise caution in prescribing for these patients.

**Adverse Reactions:** (percentage of patients)

Therapy-related adverse reactions are uncommon. Those reported include:
• Hypersensitivity reactions have been reported in about 1.5% of patients and include morbilliform eruptions (1 in 100). Pruritus, urticaria, and positive Coombs' tests each occur in less than 1 in 200 patients. Cases of **serum-sickness-like** reactions have been reported with the use of Ceclor. These are characterized by findings of erythema multiforme, rashes, and other skin manifestations accompanied by arthritis/arthralgia, with or without fever, and differ from classic serum sickness in that there is infrequently associated lymphadenopathy and proteinuria, no circulating immune complexes, and no evidence to date of sequelae of the reaction. While further investigation is ongoing, **serum-sickness-like** reactions appear to be due to hypersensitivity and more often occur during or following a second (or subsequent) course of therapy with Ceclor. Such reactions have been reported more frequently in children than in adults with an overall occurrence ranging from 1 in 200 (0.5%) in one focused trial to 2 in 8,346 (0.024%) in overall clinical trials (with an incidence in children in clinical trials of 0.055%) to 1 in 38,000 (0.003%) in spontaneous event reports. Signs and symptoms usually occur a few days after initiation of therapy and subside within a few days after cessation of therapy; occasionally these reactions have resulted in hospitalization, usually of short duration (median hospitalization = two to three days, based on postmarketing surveillance studies). In those requiring hospitalization, the symptoms have ranged from mild to severe at the time of admission with more of the severe reactions occurring in children. Antihistamines and glucocorticoids appear to enhance resolution of the signs and symptoms. No serious sequelae have been reported.
• Stevens-Johnson syndrome, toxic epidermal necrolysis, and anaphylaxis have been reported rarely. Anaphylaxis may be more common in patients with a history of penicillin allergy.
• Gastrointestinal (mostly diarrhea): 2.5%
• Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment.
• As with some penicillins and some other cephalosporins, transient hepatitis and cholestatic jaundice have been reported rarely.
• Rarely, reversible hyperactivity, nervousness, insomnia, confusion, hypertonia, dizziness, and somnolence have been reported.
• Other: eosinophilia, 2%; genital pruritus or vaginitis, less than 1% and, rarely, thrombocytopenia and reversible interstitial nephritis.

Abnormalities in laboratory results of uncertain etiology.
• Slight elevations in hepatic enzymes.
• Transient lymphocytosis, leukopenia, and, rarely, hemolytic anemia and reversible neutropenia.
• Rare reports of increased prothrombin time with or without clinical bleeding in patients receiving Ceclor and Coumadin concomitantly.
• Abnormal urinalysis; elevations in BUN or serum creatinine.
• Positive direct Coombs' test.
• False-positive tests for urinary glucose with Benedict's or Fehling's solution and Clinitest® tablets but not with Tes-Tape® (glucose enzymatic test strip, Lilly).

PA 8791 AMP [021490LRI]

*Additional information available to the profession on request from Eli Lilly and Company, Indianapolis, Indiana 46285.*

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REHAB. The average number of combined days was 116.8 days, as compared to 100 days in the national database. The difference is not statistically significant.

The place of residence at discharge in both the REHAB and national databases was identical. A large majority (88.1% at REHAB and 91.9% nationally) was discharged to private residences, in most cases their homes prior to injury. The remaining patients were discharged to nursing homes, other hospitals, or to group homes.

**Summary and discussion**

In general, the population treated at REHAB resembles the population in the national database. SCI primarily involved male teenagers and young adults. MVAs contributed to the most injuries followed by falls, sports, and violence; however the age of the victim was a factor. Cervical lesions accounted for most of the injuries. Half of the injured were neurologically complete and one-third were motor functional. Two-thirds of those injured required the use of wheelchairs. More than half were independent (with or without assistive devices) in mobility skills and feeding. Nearly 40% were independent (with assistive devices) in bathing and dressing. The majority of those injured returned to their homes.

Differences between REHAB and the national database existed in the methods of bladder management. The bladder management methods used at REHAB reflect the more recent, acceptable and preferred methods, the figures from the national database were collected prior to 1986. The higher percentages at REHAB of ICP may be a factor in a lower incidence of upper urinary tract deterioration and kidney failure. It should also be noted that many patients are on both ICP and condom drainage at the time of discharge. The lower percentage of condom drainage methods at REHAB may also be a factor resulting in increased continence; it is the preferred method.

Ideally, our study would also have examined the frequency and the causes of SCI in the whole State of Hawaii, instead of just at REHAB. Therefore, several cautionary notes must be considered. Due to the lack of mandatory reporting by law of SCI in the State, the actual incidence is most likely higher than that noted in this report. Of the 59 persons with spinal cord injury presented in the study, 3 persons were from Pacific Island countries; 56 persons listed Hawaii as their place of residence. Although the frequency of SCI appears to be 28 per million in Hawaii, which would be within the range of national statistics, several groups are excluded from this sample. These groups include the following: tourists who sustain spinal cord injuries and prefer to return to their home state or native country for comprehensive inpatient rehabilitation; active and/or retired military and their dependents who may be stabilized then transferred to a military base hospital or Veteran's Hospital in the continental United States; and patients on a specific, managed-care insurance plan that does not pay for inpatient rehabilitation outside of its hospital system.

Despite the limitations of this study, comparison of this project's statistics with those available nationally is a necessary first step towards injury surveillance, and, eventually, measuring the impact of our existing prevention programs, such as the Spinal Cord & Head Injury Project (SCHIP). A review of current SCI registries and surveillance systems nationwide indicates that there are presently 11 states with a legislative mandate for reporting. There has also been a concerted effort by the Centers for Disease Control (CDC) and the Council for State & Territorial Epidemiologists (CSTE) to have SCI listed as the first injury condition reportable to state health agencies and the CDC. The rationale for selecting SCI for injury surveillance was due to the seriousness of these injuries and the potential for their prevention. It was also considered a practical choice because the number of cases is small enough to be manageable, and a consensus could be reached on case definition.

Although there is no formal reporting requirement of SCI in Hawaii, several agencies collect trauma-related information. The State Department of Health is developing an integrated data base to evaluate the effectiveness of the Emergency Medical System's response to trauma resulting from all causes of injury. Acute care hospitals are participating in this project; this will provide a pool of information.

By supporting mandatory reporting by law of SCI in our State, a more comprehensive profile would be available on this devastating catastrophic disability. Information generated from such a SCI surveillance could accomplish several objectives: (a) Identify patients that require early intervention and a comprehensive rehabilitation program, beginning at the onset of the injury in order to maximize functional levels of independence; (b) evaluate and monitor patient outcome; (c) plan for long-term follow-up of health care needs; (d) identify high risk groups and evaluate the effectiveness of existing prevention programs; and (e) develop new programs earlier in the educational curriculum of the schools as a preventive measure.

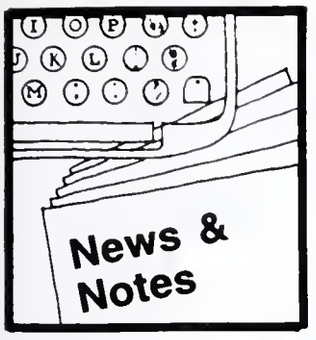
ACKNOWLEDGEMENTS

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■




HENRY YOKOYAMA, MD

## Rising Health Insurance Rates

Kaiser Permanente, with 179,000 members, is raising it's rates an average 14% in 1991 ... The increase is less than the 22% jump in Jan 1990 ... The rate increases in the late 1980s had been under 10% ... David Dunlap, Kaiser Health Plan manager blamed the higher rates on the aging population, expensive new drugs and technology, and intense competition for doctors, nurses and other health care workers ... Kaiser Plan B will rise from $90.36/mo to $100.70 for a single person and for a family of 3 or more from $271.08/mo to $302.10...

HMSA with 560,000 members last raised it's small group rates an average of 8.9% in July; the large company rate increases range from 12-14% ... Rates for individual members who make up 10% of membership either will stay the same or rise 5.1%...

| Kaiser Rates | HMSA Rates |
|---|---|
| '86 .....6.5% | '86 .....16.2% |
| 3.8% | 15.7% |
| 3.7% | '88 .....13% |
| '89 .....10% | 19.6% |
| 22% | '90 .....8.9% |
| '91 .....14% | |

*Gregory House* ... The Makiki shelter for HIV infected persons will have a psyehological services program headed by Straub clinical psychologist Robert Kalkman ... The program was designed by Michael Burnett, exeeutive director of Hoomanolana (whieh operates Gregory House) and is funded by a $40,000 grant from Hawaii Community Foundation's Robert E. Black Trust ... Burnett and Kalkman plan to present the model program at the 7th International AIDS Conference next June in Florenee, Italy ...

## Life in These Parts

The 13-year-old satellite unit of the St Francis Medical Center's Renal Institute of the Pacific in Waipahu moved to the St Francis Medical Center-West in November...

State insurance commissioner Robin Campaniano predicts that health insurance rates will rise 15 to 20% in the next few years and business can expect to pay for it ... Hawaii residents have excellent coverage and a greater percentage of the population is covered by mandated health care plans than on the Mainland ...

Hawaii Rent All sign for October-November: "Raise the Roof ... Rent A Jack."

## Oncology Dialogue

A 61-year-old woman had a breast biopsy which proved to be invasive ductal Ca... The primary was 0.7 cm² ... ER and PR were not done because the surgeon was told the lesion was too small to do the receptor studies ... Moderator Glenn Kokame asked, "What is the minimal size?" Pathologist Takushi Hayashi elucidated, "The minimal size is 0.5 cm² but nowadays we can do PR and ER on even smaller lesions with immunochemical means..." Glenn declared, "Superficial tumors are often missed on mammograms. I've had several missed..." Radiologist Dave Sakuda rose to the defense of mammograms, "I don't think that is true ... Superficial tumors should be easier to detect ... A lot of women come in convinced they don't have Ca because their screening mammograms were negative ... They had the $39 drugstore special ... Sereening mammograms are a one-shot deal and the radiologist doesn't even see the patient..." Glenn inquired, "What's the difference between screening and diagnostic mammograms?" Dave explained with gusto: The breast is like a mount ... It's important to compress the breast flat so the more it hurts, the better ... I wish the doetors would warn patients that it will hurt a little ... With diagnostics, we do cone compression and it hurts a little..." Glenn tumed to radiotherapist Ed Quinlan, "Ed, how about radiothcrapy..." Ed explained, "She has an intact breast. The agreement pre-biopsy was that she would have radiotherapy as the primary mode of therapy..."

LECTURE NOTES: Treatment of Mild and Moderate Hypertension ... VP J. Schroeder

Quality of Life Issues: "It's hard to make an asymptomatic patient feel better." ... S. Hoet

Plasma lipids: rise with diuretics and Beta Blockers ... unaffected by Alpha blockers, Ca Blockers and ACE...

50% of HTN patients have concomittant disease viz coronary disease, diabetes, hyper-lipidemia, renal disease and obstructive pulmonary disease...

Captopril: Useful in all degrees of HTN ... has less adverse effects than Beta Blockers ... can be combined with diuretics...

## Conference Notes

*New Drugs and New Indications in Dermatology:* Lecture by visiting professor Riehard Odom from UCSF at Mabel Smyth Auditorium November 9...

Metrogel (metonidazole): Rosacea shows 70% improvement in 3 weeks ... Useful in perioral and periorbital dermatitis and decubitus uleers (anaerobic/malodorous)

Baetroban: 2% mupirocin (Beecham Lab) ... Topical mupiroein effective in chronic recurrent furunculosis, impetigo, atopic dermatitis, infeeted uleers/wounds, surgical wounds.

Photoplex: UVA sunsereen ... For aeute and chronic sun damage and photosensitivity disorders.

Permethin 5% cream: New therapy for scabies ... Safe in infants (Kwell causes neurotoxicity).

Pramoxine: Prax cream and lotion (0.5%, 1% and 2.5%) Topical anesthetic esp for anogenital pruritus...

*Seborrheic dermatitis: 1-3% of general population; 3-5% young adults and 50-80% of HIV patients.

a/Pityrosporin orbicularc

80% of patients respond to ketoconazolc...

Rx of seborrheie dermatitis in AIDS patients with Nizeral cream with 2½ hydroeortone or with ketoconazole

Fluconazole (DIFLUCAN): For oral eandidiasis and cryptococcus ... 6 times the cost of ketoconazole...

Retin A: Dermatologists are still using ... 0.1% Retin A eream a) increases blood supply in 16 weeks; b)reduces fine wrinkling; c) improves skin texture; d)reduces pigmentation and premalignant ehanges...

New Uses of Tretinoin: a)Improves wound healing; b) Treatment cervieal dysplasia; c) Reduees keloids and sears; d) Prevents certain skin cancers; e) *Stimulates hair growth* (esp with minoxidal)

Pentoxifylline (Trental): a) Useful in Livedo Vasculitis, intermittent claudidation vasooeelusive crisis of sickle eell disease, vascular complieations of diabetes mellitus. Dosage: 400mg tid for a month.

Non-sedating antihistamines (Seldane and Hismanal):

1. Seldane 60mg bid (non-sedating and equal efficaey as ehlorophenical)
2. Hismanal (Astemizole): potent antihistamine 10mg/d q 24 hrs ... limited serotonin effect ... 85% effeetive in ehronic urticaria.

Acyclovir: FDA approval for Rx Herpes Zoster ... Start within 72 hrs ... 800mg 5x/d for 7 to 10 days ... reduees healing time, prevents new lesions and reduees shedding... Also use in adult Varicella.

Flutamine (Anti-androgen): Reduces plasma LH, progesterone, estradiol ... Useful in Rx of hirsutism, seborrhea, aene ... Side effects: hot flashes, increased appetite...

Minoxidil: 2% concentration ... Effective in androgenetic alopecia and male pattern baldness ... Use bid for a minimum 4 months ... Reverts to original when Rx stopped ... Costs $50-$60/mo...

*Post-herpetic Neuralgia (Older patients over age 50): Acyclovir 4gm/d (800mg 5x/d) with prednisone: 60mg for 5 days; 40mg for 5 days; 20mg for 5 days...

## Miscellany

The golfer was having a bad day ... After hitting his third tee shot into the water, he grabbed his bag from his caddy and marched down to the edge of the pond ... He then proceeded to pull out each club and throw it into the middle of the pond with a loud curse ... Then finally the bag followed ... "Now I'm going to jump in and drown myself!" he declared. "You can't do that sir!" "I can do as I damn please!" the golfer bellowed ... "No you can't sir..." the caddy insisted ... "Why the hell can't I ... It's my life..." "Yes sir ... But you never did leam to keep your head down..."

(A Bill Dang kind of a golf joke...)

* * *

An elderly woman approached the pearly gates and knocked ... "Who is it?" St Peter asked ... "It is I" replied the woman ... "Good God," St Peter muttered ... "Another damn school teacher..." (Anonymous)

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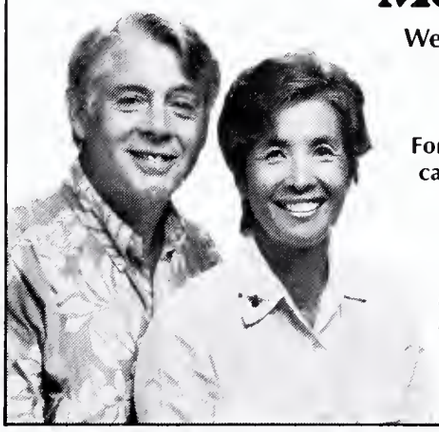
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## Over the Editor's Desk

S. Kalani Brady, MD

**DOCTORS: YOUR FUNNY STORIES ARE NEEDED FOR THE BOOK "KEEPING YOUR DOCTOR IN STITCHES"** — This book is designed to show the funny side of medicine.

It will deal with those situations you have all experienced in which the words or actions of patients and colleagues have left you limp with laughter. These stories have taken place in the hospital, in your office or any other place where the healing arts are practiced. The book will cover all medical specialties.

Patients will be kept anonymous and doctors and nurses may also remain nameless, if they so desire.

Reaction to this book, so far, has been very positive. Your stories could be included.

If you wish to submit stories, please include your name, address, medical specialty and hospital affiliation.

For more information on this project, read the April 20th issue of the American Medical News, page 27.

If you wish to join me in this endeavor, please send your articles to: Don Herbert, 12327 Erwin Street, North Hollywood, Calif. 91606. Or telephone (808) 980-0458.

**CANCER STUDY RAISES MORE QUESTIONS THAN IT ANSWERS** — A study released today by the National Cancer Institute (NCI) does not eliminate concern about the health risks of nuclear weapons facilities, according to a national physicians group. "The study raises more questions than it answers about nuclear weapons production and cancer," said David Lewis, Director of Public Affairs for Physicians for Social Responsibility (PSR).

"The NCI study shows higher relative risk for some cancers around nuclear

*(Continued)* ▶

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**OTED** *(Continued from page 52)*

weapons facilities operated by the Department of Energy (DOE). This is not a clean bill of health at all — these findings merit much more indepth study," said Lewis.

"This is a mortality study, which only measures cancer deaths, not incidence of cancer and other illnesses," Lewis said, "the NCI itself noted that cancer incidence data should be studied for a more sensitive assessment of possible increases around nuclear facilities."

"Many cancers take years to develop and the U.S. population is very mobile — these and other factors could account for the NCI's overall finding of no excess cancer mortality risk in counties with nuclear facilities, as the survey's authors admitted," Lewis said.

Lewis noted several of the study's results for the nine DOE facilities surveyed that showed higher relative risk in the years after start-up:

• Significantly larger relative risk among children below age ten for cancer of the trachea, bronchus and lung, which is extremely rare in children;

• Higher relative risk of bone and joint cancer among ten to 19-year-olds;

• Higher relative risk of primary liver cancer, female breast cancer and bone and joint cancer among 20- to 39-year-olds.

"As the NCI acknowledged, the research agenda should emphasize careful, case-control studies of cancer incidence, including a replication of the recent study by Gardner examining risk of leukemia in children living near the Sellafield nuclear reprocessing plant in Britain," Lewis concluded.

PSR has called for the complete and immediate release of DOE records on the health of workers at nuclear facilities, and for independent oversight of health and safety at those facilities.

Physicians for Social Responsibility is a national membership organization of 30,000 health professionals, which is monitoring the health risks of nuclear weapons production.

**SURVIVAL RATE JUMPS TO 89% FOR SOME WOMEN WITH CERVICAL CANCER —** Women with early yet bulky cervical cancer whose pelvic and para-aortic lymph nodes are treated with radiation have a much greater chance for cure than those treated only to the pelvis, a new study has found.

Dr. Marvin Rotman of the State University of New York in Brooklyn said today that 335 women with bulky stage IB, IIA and IIB cancers took part in the Radiation Therapy Oncology Group (RTOG) clinic trials. Those who received the additional radiation to their abdominal para-aortic lymph nodes had a 66 percent cure rate at five years. That compares with 55% for those treated with radiation to the pelvis alone. This is a "significant difference," said Dr. James Cox, chairman of the RTOG, the largest radiation oncology research group in the world.

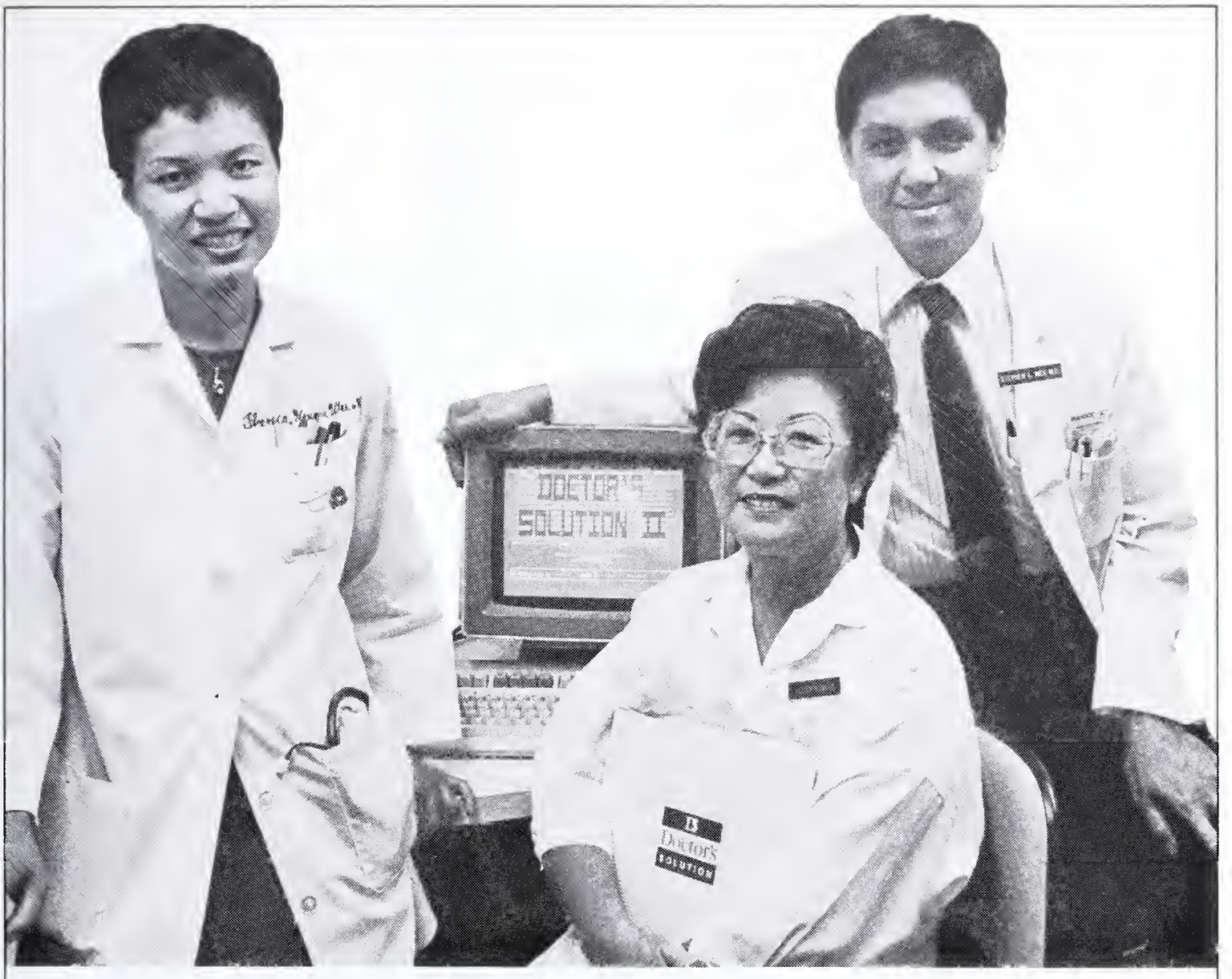
When the women with more advanced cancers were removed from the analysis, Dr. Rotman said, the cure rate of the patients treated with radiation to their abdominal lymph nodes jumped to 89% at two years. That compares with 66% of those treated with limited radiation.

Women who undergo hysterectomy as treatment for this type of cancer have a similar survival rate as those who are treated with radiation only to the pelvis.

The women in the study had no apparent para-aortic lymph node involvement when they were treated, Dr. Rotman noted. But these cancers are very predictable, he said. They often use the para-aortic lymph nodes as "a pathway to spread." "What we are doing," Dr. Rotman said, "is irradicating disease in that pathway while it is still microscopic and thereby improving the patient's chance for cure."

Dr. Rotman added that currently many patients have cervical cancer recur following surgery or limited radiation because their cancer has moved to involve their para-aortic lymph nodes. These women only have a 17 to 25% chance for cure, he said. If we treat the pelvis and para-aortic nodes more of these patients will be cured.

The American Cancer Society reports that cervical cancer is the second most common cancer found in women age 15 to 34. More than 50,000 women are expected to develop the disease in 1990 — most of those being non-invasive cancers. Cervical cancer is more prevalent in the lower socioeconomic groups. The lifestyles of these groups — they seem to have intercourse at an earlier age and have more frequent sexual activity — play a major role in their higher incidence.




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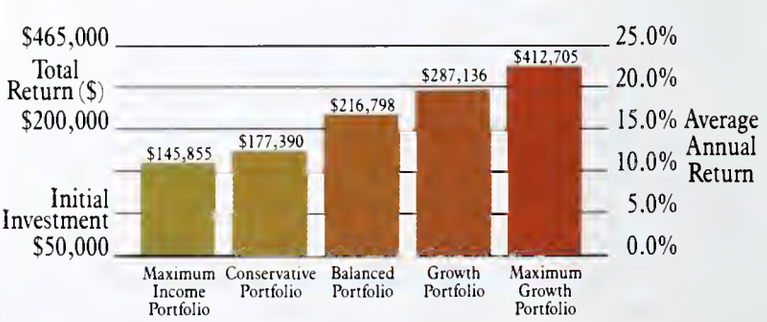
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# HAWAII MEDICAL JOURNAL

## Special Toxicology Issue

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• Stevens-Johnson syndrome, toxic epidermal necrolysis, and anaphylaxis have been reported rarely. Anaphylaxis may be more common in patients with a history of penicillin allergy.
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# To Protect Our Environment

This special issue of the Journal is replete with articles by Hawaii's own, indicating the interest of the medical profession in our fragile environment in terms of how it affects the health of our people.

Steve Moser from Maui, recipient of the A.H. Robins award by the HMA for being the Physician of the Year in 1985, is the issue editor. Kudos is due him for working hard to assemble the manuscripts (should I say dragging them out of their authors?). They cover the entire spectrum — almost. It has taken nearly a year.

This issue should stand a long time as an essential reference source. It will be a valuable learning experience for every physician in Hawaii.

J I Frederick Reppun MD
Editor

# The medical issue of our polluted environment

*Hawaii has a reputation for being one of the least polluted states in the United States. It enjoys this distinction because of its location in the middle of the largest ocean in the world, its relatively recent discovery, its largely agricultural history, and its immense natural beauty. With the introduction of Western civilization, however, and more recently the massive growth of population, both residential and visitor, Hawaii's natural environment and the previous unspoken guarantee of a safe and healthful environment are being threatened.*

In some cases, old accepted practices, such as the burning of sugarcane, are running up against the concerns of newcomers who are settling in areas in close proximity to cane fields. In other cases, the continued use of pesticides may threaten the purity of aquifers whose water is necessary for the future growth of the population, as we have seen at Mililani on Oahu.

Technologies new to Hawaii, such as hazardous waste incineration and geothermal power development, may present problems due to our unique atmospheric and geologic conditions. Old technologies, such as the gasoline-powered vehicle and the landfill, are becoming more serious problems simply because of the great increase in the number of vehicles and the enormous amount of waste generated by the people who are settling here. Sewage disposal is becoming a concern on all of the islands as present capacity is approached, again because of uncontrolled population growth.

The presence of the military in the Hawaiian Islands has always presented some challenges to the environment. Unexploded ordnance has made many large tracts of land unreclaimable. Anti-fouling paint may threaten the marine environment. Large stockpiles of nuclear weapons exist in the vicinity of Pearl Harbor. Newer developments, such as the launching of large rockets from the Kauai Barking Sands Missile Range and from the proposed space-port in Ka'u on the Big Island, raise environmental concerns as to the safety of rocket fuels. The recent selection of Schofield Barracks as a "Superfund" cleanup site raises concerns because of possible serious groundwater contamination by the carcinogen trichloroethane; it is but one example of how pollution may occur in Hawaii.

Even natural phenomena, such as volcanic emissions and the flow of lava into the sea, may present new problems as the pressure of population in areas in close proximity is occurring. Natural phenomena typically fall beyond the purview of the state regulatory agencies. However, since lead was found to be leaching into the drinking water of Big Island catchment systems due to acid rain two years ago, the State, after performing a limited study of the problem, has yet to regulate the building of these water systems so that the problem can be prevented.

This issue of the *Journal* represents a limited attempt to present some of the main environmental health concerns in the State of Hawaii. The practicing physician may well ask what place such concerns have in a journal of general medical readership. Why should a busy clinician, obstetrician, pathologist or radiologist be concerned with pesticides in groundwater, with air pollution? We hope to provide some of the many answers.

Beside the obvious answer that environmental contaminants may cause a variety of serious human diseases, perhaps less well-known is the fact that physicians are the primary detectors of environmentally caused illness. New laws mandating the reporting of diseases related to the toxic effects of pesticide and heavy metal have sprung up around the country, most recently here in Hawaii. Physicians will be aiding the governmental departments of health by diagnosing, treating and reporting these disorders. Such responsibilities can no longer be relegated to "occupational medicine" specialists. The environmental contamination reaches out beyond the workplace.

*(Continued on page 63)* ▶

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In addition, because of inadequate staffing and funding of health departments, physicians must become advocates on behalf of their patients in dealing with the State, with industry and with agriculture, so that prevention of environmental illness can become a reality. Just as handwashing will stem a pseudomonas epidemic in the intensive care unit of a hospital, and a low cholesterol diet and exercise will mitigate against coronary artery disease, so will lobbying and advocacy on behalf of patients by their personal physicians potentially prevent the chance that an infant will be born with some rare birth defect which, while statistically unlikely, would prove very unfortunate for the particular individual who is afflicted.

Recently, we have had to acknowledge one of the more sinister aspects of environmental medicine, and that is the reality of corporate lying and subterfuge. This has been brought forcefully home in the past few months with the startling revelations by the Environmental Protection Agency (EPA) regarding Monsanto's pervasive and systematic falsification of data and suppression of information regarding the carcinogenicity of dioxin and its widespread high-level contamination of Monsanto's most popular products[1].

In a law suit against the company in 1985, investigators, who had published a study documenting the cancer rates resulting from a dioxin spill at one of the Monsanto factories in 1949, acknowledged that they had purposefully omitted 5 cancers deaths from the exposed group and put 4 cancer patients from the exposed group into the control group, thereby being able to report no significant effect on cancer rates from a massive dioxin exposure. What had been proven to be a highly significant carcinogenic effect (50% increase in the dioxin exposed group) was fraudulently erased for reasons that one can only speculate upon.

Tragically, on the basis of this well-documented study, the EPA subsequently dismissed other less well-documented studies with lesser degrees of exposure, and felt safe in telling the world that dioxins did not cause cancer. Data on long-term psychoneuroses in the exposed group were similarly falsified and buried.

Testimony during the court case revealed in addition that commonly used Monsanto products, such as Lysol (made from a Monsanto product), pentachlorophenol and Santophen were heavily contaminated with dioxins for up to 30 years, with full knowledge of the company. They did not tell their employees, their customers nor the EPA about the contamination. Meanwhile, they knew of the falsification of the dioxin cancer study.

It is this haunting spectre of corporate malice aforethought that must make even the most sanguine of us concerned about the process by which our government agencies, especially the EPA, purportedly protects us. At this very moment, the HMA is evaluating the response to a Freedom of Information Act request that was filed with the EPA last year over the original Monsanto studies done for the registration of the commonly used roadside and garden herbicide glyphosate (Roundup or Rodeo).

All the basic scientific studies dealing with the mutagenicity, carcigenicity and teratogenicity of the product have been performed by the manufacturer or its consultants. We are told that this product is entirely safe, and we use it without restraint. Given the dioxin debacle, however, we must acknowledge a little trepidation concerning this ubiquitous product.

We fully acknowledge that environmental medicine is an area of great controversy in this State and around the world. The tradeoff between economic realities and environmental purity will always be a balancing act. Nonetheless, the public is finally beginning to perceive the importance of maintaining and preserving the earth from chemical degradation, because of a growing consciousness that human life is earth-bound and that what happens to our water, air and land will eventually affect our bodies and, in the end, our survival.

I have taken the liberty of commenting on each of the articles that we have accepted for publication in this special issue of the *Journal*.

**1. Au. Groundwater contamination in Hawaii**

Hawaii has the longest growing season in the nation. Decades of intensive sugar and pineapple monoculture have necessitated year-round use of pesticides, which increases on a yearly basis as a result of the emergence of resistant insects and weeds.

Although drinking water wells are still relatively uncontaminated, constant agricultural spraying has already proven to be a problem because of the trend, as the population grows, of developing agricultural land for housing, with the concomitant need for more water.

Mililani found its erstwhile agricultural water contaminated with unacceptably high levels of toxins and was forced to construct and use an expensive purification plant.

Other areas of Oahu and on the other islands stand on the verge of developing agricultural lands and attempting to find potable water for the new residents. Nitrates from chemical fertilizers and other sources are present in Hawaiian agricultural wells to a dangerous degree should these wells ever be needed for human use[2].

The practice of risk assessment, while an excellent method for evaluating the carcinogenic potential of a single chemical, carries many caveats. The first is that risk assessment does not, and really cannot, evaluate multiple chemical exposures. The water we drink is a "soup" of chemicals, all at very low doses, it is true, but all with their own effects on living organisms. Whether these effects are additive, synergistic, or neither, is almost always unknown.

Secondly, there are hundreds of thousands of chemicals currently registered for use in this country, and most of them have not been studied enough to do an adequate assessment of risk. Of the ones that have been studied, we are all too often forced to rely on "...more protective..." (author's words) studies on which to base our assessments.

Thirdly, in the State of Hawaii, the agricultural industry is not required to tell the State which chemicals they are using on the crops. This of course makes it difficult to determine which ones to look for in the water, and thereby to assess risk.

The State has just completed its revision of groundwater protection strategy[3]. This document is an example of the extremely difficult choices that must be made in regard to

*(Continued on page 65)* ▶

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which waters must be protected, to what degree, and who will have the ultimate responsibility. How well this document will serve as a template to protect our groundwater from further contamination remains to be seen.

**2. Maskarinec. Environmental epidemiology**

As an empirical science, environmental epidemiology faces some great hurdles, some of them alluded to by the author. The main problems revolve around the ability to draw conclusions from data that these studies generate and depend upon. If the dose of a contaminant is large, and the population at risk is large, then a well-designed study should be able to draw fairly firm conclusions as to whether the contaminant is associated with an adverse effect. If the dose is small and the at-risk group is small, almost no conclusions can be drawn from even the best designed study. Unfortunately most situations of contamination in the real world fit into the latter scenario.

A second hurdle results from the lack of good epidemiologic databases. For instance, the Hawaii Tumor Registry is an excellent registry for documenting types of tumors in the State on the basis of survival rates, age and sex. However, because it lacks any occupational, habit, or residence data, it is practically useless for examining cancer clusters, cancer relation to industrial (or agricultural) exposure, or habit-related cancers. Attempts to upgrade the Registry to include such information gathering have been unsuccessful. Similarly, bills to fund a statewide, birth-defects-monitoring program have repeatedly failed at the Legislature, despite strong community and HMA support.

The third, and perhaps greatest hurdle in declaring environmental epidemiology a bona fide science, is our great difficulty in converting positive findings into public and industry policy. When correlations are found between contaminants and health effects, such information is often met with extreme skepticism in the governmental and industrial decision-making circles. More studies are called for; administrations change; the public tends to forget.

We still live in a society where the proof of the damage, actual or potential, is on the victim and not on the perpetrator. The victim must usually demonstrate that his injury was caused, beyond a reasonable doubt, by the substance in question. When such proof is lacking, either because of inability to quantify exposure levels, or because of the enormous lacunae in the scientific research on most of the chemicals that have been approved, there is very little that can be done to obtain recompense or prevent recurrence. This state of affairs must change, and in some places such as California, steps are being taken to rectify this inequity.

**3. Grimes. Fire fighters**

Perhaps the most fascinating finding in this brief Proportionate Mortality Ratio study is that fire fighters have much less lung disease than the average population of nonfire fighters. Fire fighters are trained to wear appropriate masks in fires in which toxic combustion products may be present. Is it a likely possibility that firefighters have a lower prevalence of cigarette smoking?

**4. Kodama. UH Occupational-health training**

It is good to know that an interested physician can take course work in public health or occupational medicine at the University of Hawaii in pursuit of certification requirements without having to leave the State.

It is unfortunate that the State does not have a baccalaureate program in this growing field, since there is a growing need for such a learning center in Hawaii. There needs to be a much stronger program for training medical students in environmental and occupational medicine. These specialties were largely lacking in our medical school training, and it is becoming evident that they enter into our daily medical practice at many levels and in relation to many disease processes. Which one of us is capable of taking a complete occupational and exposure history, need I ask?

**5. Wiebe. Lead poisoning**

A little more detail is necessary for readers to understand the scope of the problem of lead in catchment drinking water on the island of Hawaii, and indeed on other islands. There are about 7,000 residences on the Big Island which supply drinking water from catchment systems. The at-risk population of adults and children on the Big Island is substantial. Of the conservatively estimated 28,000 individuals, possibly one-half the number are children, with a substantial number of these under age 6. A major methodological problem with the survey done in 1988 is that it included mainly those concerned and aware families who volunteered to have their blood tested. There is a high likelihood that this "worried well" group had stopped drinking the catchment water several months prior to the blood testing. These possibilities create a bias that would tend to underestimate the true number of individuals with elevated blood levels.

Of even greater concern is that the State is taking very little initiative to prevent contamination of catchment systems by regulating and inspecting their construction. Correspondence by the HMA to the various state and county regulatory agencies last year revealed that no agency is willing to take responsibility for regulating and inspecting private water-catchment systems.[4] Information on safe building materials and practices is occasionally available, but only upon request. A bill that would have mandated the State Department of Health (DoH) to regulate and inspect catchment systems was opposed by it and was defeated in the 1990 Legislature. I have been told by residents that hardware stores on the island of Hawaii are still selling lead-containing materials for catchment systems. Also, there is no ongoing screening for lead in the State at this time, though the DoH proposes to do so soon. There has been no official monitoring of the use of state-supplied, "spigot-water" to determine whether it is being used in lieu of home catchment-water for drinking.

The expansion of geothermal activities on the Big Island has the potential for causing acid rain in the Puna area, an area that does not now experience this phenomenon, but is heavily reliant on catchment water. Pediatricians in the State should be aware of the potential for low-level lead-toxicity in children; physicians should be familiar with the American Academy of Pediatrics "Statement on Childhood Lead Poisoning",

*(Continued on page 66)* ▶

and should test for lead-levels in selected children.

**6. Hallenborg. Medical consequences of acute high altitude exposure**

Although not truly a toxic environmental condition, high altitude sickness is an "environmental" illness that is not generally recognized in Hawaii. Hundreds of tourists a day board buses and rental cars for the long drive to the summit of Haleakala. Many of these people are older and debilitated. There have been numerous documented episodes of congestive heart failure, angina and myocardial infarction resulting from even relatively brief exposures to the thin cold air of the summit in patients, most of whom had emphysema or coronary artery disease; some were not aware that they had such a preexisting problem.

It is unfortunate that the tourist industry in Hawaii has not seen fit to take the responsibility to warn potential victims of this unsuspected pitfall. As yet, the State has also neglected to post warnings or provide needed resuscitative equipment at the summit.

For that matter, there are several potentially hazardous environmental conditions that exist in this State in high concentration, such as beaches with pounding shorebreaks and strong riptides, etc.

**7. Hallenborg et al. Air pollution — asbestos, cane, VOG**

This is a basic review of the existing literature dealing with the known health effects of asbestos, sugarcane burning and VOG. While asbestos has been well-studied over the years, and VOG is primarily a problem localized to the Big Island community downwind from the volcano, sugarcane burning is ubiquitous in the Islands and has become the subject of a great deal of controversy as more people move to Hawaii who are not acquainted with this practice. Expectations of a pristine environment are challenged by this daily practice. Questions of nuisance and aesthetic displeasure versus significant health risk become more important as habitations encroach on agricultural areas previously devoted to sugar around the Islands.

A primary concern among researchers and environmentalists is whether the biogenic silica fibers present in the sugarcane and sugarcane smoke present a health risk, such as has been found to exist with the similarly shaped-and-sized fibers of asbestos. This paper discusses the research done in this area.

One way that has been suggested to solve the two major problems of adverse effects on air quality by open field burning and dependency of the State on foreign oil has been to retool the sugar mills to burn not only oil and coal, but raw sugarcane as well. This biomass would be a much cleaner source of fuel than either coal or oil. The capital for this conversion for one mill (HC&S on Maui) has been estimated as about $32 million in 1986, but as fossil fuel prices rise, this home-grown source of energy might rapidly pay for itself.

When considering that the State in the last two years has lent $20 million to sugar companies on Hawaii to keep them solvent, a joint venture to underwrite this health ensuring and economically prudent conversion would be welcome.

**8. Baker. Heptachlor in milk in Hawaii**

This paper provides a brief overview of the the scope of the heptachlor contamination problem in Hawaii and the studies that have been done and those proposed. What is clear is that the State did not have the public health or academic resources at the time of the contamination in order to deal with an environmental problem of this magnitude.

The studies already done, in general, lacked impact because of inadequate individual exposure assessment, biases involving lack of consideration with regard to ethnicity when evaluating milk consumption, and self-selection of milk donors.

Perhaps the most difficult aspect of studying this sort of contamination is the nature of the effects that are anticipated from such low-level exposure as well as subtle neurologic, immunologic and carcinogenic effects that may occur decades after the exposure. Maintaining records on an adequate number of subjects to give the study power will be difficult at best. Fortunately for the researchers, but perhaps not for the subjects, heptachlor is known to remain in adipose tissue indefinitely, thereby giving validity to measuring levels now, and extrapolating back to the exposure levels, thus providing the possibility of correlating levels of exposure with outcomes.

In the present era of medicine's general consternation with regard to liability and the legal profession in general, we must mention that, without a dedicated and capable lawyer working with an independent motivated researcher who were willing to take on this very difficult and complex case for the sake of children who were innocently exposed, the substantial amount of money that it takes to do the necessary scientific research would never have been available.

The $5 million award was placed into a fund to set up the Hawaii Heptachlor Research and Education Foundation, which was composed of a hand-picked group of experts renowned in the field. These investigators, after evaluating all of the available studies, reviewed proposals submitted for further research and chose the most worthy for funding out of the settlement monies. Such exemplary litigation should serve as a model for the way in which the legal profession can benefit both victims and the public interest in a community which, for whatever reasons, cannot provide expertise in such matters.

On the larger issue of pesticide residues in food, the State of Hawaii is in line with the rest of the country in its inability to test for more than a handful of pesticides and a token number of food items. The State is aware of the problem as outlined by the Office of Environmental Quality Control several years ago, but inadequate staffing and funding have prevented the State from instituting more than minimal testing.[5]

This is a potentially growing problem because of the increasing amount of foreign produce being imported into the United States from Third World countries. It has been the practice of many large pesticide manufacturers to "dump" pesticides banned for use in this country, into foreign countries whose contaminated produce then comes back to us across our borders. Of perhaps greater concern, reports from Mexico indicate that the use of these carcinogens and mutagens by unsuspecting and unprotected field workers has resulted in higher incidences of cancer and birth defects among them.

This is a shameful legacy of our doing. There is ample room for the medical community to become more active in rectifying these inequities and for calling for adequate testing of the foods we buy.

**9. Tabrah. Electromagnetic health effects**

The author's call for a technical advisory group to assist the DoH in the evaluation of EMF issues seems very cogent in our State that has a concentrated population that has expanded rapidly and has centralized communications facilities. The military is no longer capable of isolating its powerful communications equipment and keeping it far from human habitation; conflicts, therefore, are inevitable. The DoH is even now investigating a possible cluster of leukemia on the Waianae coast near the large ULF transmitter there.

The State has very little in-house expertise in the area of electromagnetic irradiation, and the call for up-to-date monitoring equipment is welcomed. Meanwhile, until further "proof" of hazard or safety is forthcoming, there is enough epidemiologic evidence to suggest that some electromagnetic fields may be carcinogenic. Until we have harder information (which will be hard to get), the regulators should err on the side of public safety in allowing the siting of new electromagnetic sources and power lines, and should avoid permitting development of human habitation in close proximity to existing installations.

Steven M. Moser MD
Special issue editor

FOOTNOTES TO HMA ENVIRONMENTAL ISSUE EDITORIAL COMMENTS


1. EPA Memorandum, 2/23/90. Subject: Newly Revealed Fraud by Monsanto in an Epidemiological Study Used by EPA to Assess Human Health Effects from Dioxins: From Cate Jenkins (Waste Characterization Branch, Characterization and Assessment Division); To Raymond C. Loehr (Chair, Executive Committee, Science Advisory Board, Office of the Administrator).
2. Lukens JN, "The Legacy of Well-Water Methemoglobinemia," *Journal of the American Medical Association*, 257:20, 1987, pp. 2793-2795.
3. *Hawaii Ground Water Quality Protection Strategy*, Hawaii State Department of Health, March 12, 1990.
4. Correspondence on file, HMA Toxic Agents Committee, 1989.
5. "Management and Program Audit of the Environmental Protection and Health Services Division of the Department of Health: A Report to the Governor and the Legislature of the State of Hawaii," Report No. 87-16, February 1987, pp. 54-64.


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## Council Capers

# January 11, 1991

The HMA Council met on January 11, 1991 for its first meeting of the New Year. Since its incorporation in 1856, the HMA representatives have met in various places, but only four years ago, or after 130 years of existence, the meeting was again held in a "home" of its own, on 1360 South Beretania Street. Needless to say, you are welcome anytime for business or respite.

**Chowhound . . .** Dr. John Spangler, who must be on a diet, was amazed at my heaping plate of delicious Korean food. El Presidente John McDonnell was punctual and called the meeting to order.

**Head Count:** Dr. Andy Don reported that total membership of HMA is 1,810, but there was an increase in full-dues-paying members in the Honolulu County. Sad to report that Maui County had a drop of 4 members from a total of 130. The first two purposes of the HMA are to represent the medical profession and to provide information related to medicine. Since the HMA represents the medical profession, shouldn't there be more than 65% of physicians who belong to their organization?

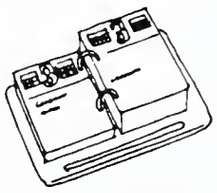
**Money . . . Money . . .** Dr. Jeanette Chang, the best-looking member of the Executive Committee, reported on the treasury, which is in good shape. A minor adjustment of the Honolulu County budget was made, with revision of the HMA budget.

**DHS Survey . . .** Only 252 responses were noted. About 50% of the response had overhead between 50-70%. In 1985, 75% of the respondents would accept new DHS patients. Now only 56% would accept new DHS patients.

**HMSA . . .** A long and serious presentation was made by our legal counsel, Vernon Char, and his associate. It was reported that the Administrative Operating Procedures were changed in 1985 and again in 1991. It was reported that the usual charge is the charge for a procedure for 9 months of the prior year. Customary was defined as the charge recorded by 90% of physicians for a similar procedure. HMSA Economic Index is derived by the increase in the Honolulu Consumer Price Index (CPI), capital account, change in per capita income divided by three. This will determine the eligible charge allowed. Diagnostic procedure amounts were up 14% this year, 9% last year. A more detailed and informative report will follow from HMA.

**Tip Of The Month:** Try the Rib Eye Steak at the Halimaile General Store. Wonderful!

Denis J. Fu, MD
Councillor from Maui



# Continuing Medical Education

The Hawaii Medical Association does not review or evaluate the programs listed in the Hawaii Medical Journal Continuing Medical Education column and assumes no responsibility for educational value, scientific content, changes in agenda or cancellations.

## CALENDAR OF ACCREDITED EVENTS—CATEGORY 1

Accredited programs of CME allow one unit of AMA credit for each hour of instruction excluding all "breaks." Asterisked programs also are accredited for AAFP prescribed credit.

### LOCAL ACCREDITED PROGRAMS
### ONGOING

**John A. Burns School of Medicine**

1. Department of Medicine
   - A. Case Conferences, second and fourth Tuesdays, 12:30-2 p.m., Queen's University Tower, Room 618.
   - B. Grand Rounds, first and third Tuesdays, 12:30-2 p.m., Queen's University Tower, Room 618.
   - C. Endocrinology Grand Rounds, first Tuesday, 5:30-6:30 p.m., Queen's University Tower, Room 506.
   - D. UH-Queen's Conference, every Friday, 8-9 a.m., Queen's Medical Center, Mabel Smyth Auditorium.
   - E. Cardiology Grand Rounds, third Tuesday, 6:30-7:30 p.m., Queen's University Tower, Room 508.
   - F. Infectious Disease Grand Rounds, first and third Thursdays, 5-6 p.m., Queen's Nalani I Conference Room.
   - G. Dermatology Grand Rounds, second Wednesday, 7:30-9:30 a.m., Queen's Medical Center, Queen Emma Clinic.
   - H. Pulmonary Grand Rounds, fourth Monday, 12:30-1:30 p.m., Queen's Medical Center, Kamehameha Lounge.
   - I. Nuclear Medicine Grand Rounds, third Wednesday, 5-6:30 p.m., Straub Clinic & Hospital, Doctors' Dining Room.
   - J. Medical-Surgical GI Grand Rounds, third Friday, 12:45-1:45 p.m., Kuakini Hospital, PB4 Classroom.
   - K. Rehabilitation Hospital of the Pacific Grand Rounds, first and third Thursdays, 7:30-8:30 a.m., Rehabilitation Conference Room, first floor.
   - L. Neurology Grand Rounds, second Thursday, 12:30-1:30 p.m., Queen's Medical Center, Kam Auditorium.
   - M. Geriatric Medicine Journal Club, first and third Wednesdays, 5:30-7 p.m. or TBA, 9th Floor Lounge, HPM, Kuakini Medical Center.
   - N. Radiology Grand Rounds, every second Tuesday, 5:30-8 p.m., Queen's Medical Center, Radiology Classroom.
2. Department of Obstetrics and Gynecology
   - A. Grand Rounds, Wednesdays, 7:30-8:30 a.m., Kapiolani Medical Center for Women and Children, second-floor auditorium.
   - B. Tuesday Conference, Tuesdays, 1-2 p.m., Kapiolani Medical Center for Women and Children, second-floor auditorium.
   - C. UH Conference, Fridays, 2:30-3:30 p.m., Kapiolani Medical Center for Women and Children, second-floor auditorium.
3. Division of Orthopedics
   - A. Fracture Conference, Mondays, 5-6 p.m., Queen's University Tower, Room 618.
   - B. Shriners' Tuesday Conference, Tuesdays, 7:15-8:15 a.m., Shriners Children's Hospital, Auditorium.
4. Department of Pediatrics
   - A. Grand Rounds, Thursdays, 8-9 a.m., Kapiolani Medical Center for Women and Children, second-floor auditorium.
   - B. Monday Noon Conference, 12:45-1:45 p.m., Kapiolani Medical Center for Women and Children, second-floor auditorium.
   - C. Pediatric Infectious Disease Conference, Thursdays, 12:30-1:30 p.m., Kapiolani Medical Center for Women and Children, third-floor conference room.
   - D. Perinatal Grand Rounds, Fridays, 8:15-9:15 a.m., Kapiolani Medical Center for Women and Children, Conference Room B.
5. Department of Psychiatry
   - A. Grand Rounds, Fridays, 8-9:30 a.m., Queen's University Tower, Room 618.
   - B. Scientific Forum, Mondays, 12:30-2 p.m., Kapiolani Medical Center for Women and Children, Conference Room 626.
   - C. Hawaii State Hospital Psychiatry Education Conference, third Wednesday, 10:30 a.m.-noon, Hawaii State Hospital, Goddard Conference Room.
6. Department of Surgery
   - A. Grand Rounds, first, second, and third Saturdays, 7:30-9 a.m., rotating hospitals.
   - B. Statistical M&M, last Saturday, 7:30-9 a.m., rotating hospitals.
   - C. Journal Club, first and third Tuesdays, 6-8 p.m., Queen's University Tower, Room 620.
   - D. Medical-Surgical GI Grand Rounds, third Friday, 12:45-1:45 p.m., Kuakini Medical Center, PB4 Classroom.
   - E. Pediatric Surgical Grand Rounds, first Friday, 12:45-1:45 p.m., Kapiolani Medical Center for Women and Children, Conference Room B.
   - F. Basic Science Lecture, Wednesdays, 7:15-8:15 a.m., Queen's University Tower, Room 618.
7. Department of Pathology
   - A. Neuropathology Conference, first Saturday, 8-9 a.m., St. Francis Hospital, Sullivan IV Classroom.

B. Pathology Grand Rounds, bimonthly, 7:30-8:30 p.m., rotating locations.

For further information on any of these programs, please call the Continuing Medical Education office at 948-6949.

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**Castle Medical Center**

1. CME Programs, first, second, and third Tuesdays, 12:30-1:30 p.m., Castle Medical Center's auditorium.
2. Windward Oncology Programs, fourth Tuesday, 12:30-1:30 p.m., Castle Medical Center's auditorium.

For further information, call Staff Development at 263-5186.

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**Chart Rehabilitation of Hawaii Inc.**

1. CME Programs, Thursdays, 8-9 a.m. Topics and speakers to be announced.

For further information, or to be placed on the mailing list, contact Comprehensive Health and Active Rehabilitation Training (CHART) at 523-1674.

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**Wilcox Memorial Hospital**

1. CME Programs, Mondays (occasional Friday), noon-2:00 p.m., G.N. Wilcox Conference Rooms.

For further information, call Medical Staff Services, 245-1173.

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**Hawaii Medical Association**

1. HMA Maternal and Perinatal Mortality Study Committee, on an on-call basis. 1360 S. Beretania St., 2nd Floor. Call 536-7702 to confirm meeting schedule.)

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**Hawaii Ophthalmological Society**

1. Monthly Dinner Meeting, third Thursday of each month (except November and December), 6:30-9:30 p.m., The Pacific Club.

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**Hawaii Thoracic Society**

1. To be announced—Visiting Professorship Program Statewide.
2. Sinclair Chest Club Quarterly Dinner Meetings, January, April, July, and October. Call Rosemary Respicio, BSN, at 537-5966 for dates and speakers.

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**Hilo Hospital**

1. Radiology Conference, first Friday, 12:30-1:30 p.m., GC-1 Conference Room.
2. Tumor Conference, second Friday, 12:30-1:30 p.m., GC-1 Conference Room.
3. "Great Case" Conference/Clinical Pharmacology, third Friday, 12:30-1:30 p.m., GC-1 Conference Room.
4. Pathology Conference/Morbidity-Mortality Review, fourth Friday, 12:30-1:30 p.m., GC-1 Conference Room.
5. Visiting Professor/Network for Continuing Medical Education Tapes (ETV), Saturdays, 7-8 a.m., GC-1 Conference Room.

For further information, call Administration at 969-4382.

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**Kaiser Permanente Medical Center**

1. Tumor Board, Tuesdays, noon-1 p.m., Moanalua Auditorium.
2. Obstetrics/Perinatal Conference, last Tuesday, 8-9 a.m., Moanalua Conference Room C-D.
3. Orthopedic Conference, Wednesdays, 8:30-9:30 a.m., Moanalua Conference Room C-D.
4. Laboratory Medicine Seminar, Wednesdays, 11 a.m.-noon, Laboratory Conference Room.

*5. Medicine Grand Rounds, Wednesdays, 8-9 a.m., Moanalua Auditorium.

*6. Interdepartmental Conferences, third Wednesday, every other month (beginning Jan. 1990), Moanalua Auditorium (call CME Office for topic.)

*7. Family Practice Grand Rounds, fourth Thursday, 7:45-9 a.m., Moanalua Conference Room C-D.

8. Surgical Grand Rounds, Fridays, 8-9 a.m., Moanalua Auditorium.
9. Surgery M&M Conference, Fridays, 9-10 a.m., Moanalua Auditorium.
10. Pathology Conference, Saturdays, 11-noon, Conference Room A.
11. Network for Continuing Medical Education (NCME) Videotape Program, Monday-Friday, available on request.

For further information, call CME Office at 834-9496 for topics.

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**Kona Hospital**

1. CME Meeting, second Thursday, bimonthly (January, March, etc.), 8-9 a.m., Hospital Dining Room.
2. Grand Rounds/Tumor Board, fourth Wednesday, 8:30-9:30 a.m., Hospital Dining Room.
3. Visiting Professor Programs, (For information, call 322-4429 or 322-4455.)

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**Kuakini Medical Center**

1. Visiting Professor Lectures (ongoing).
2. Guest Lectures (ongoing).
3. Neurology Conference, second Monday, 12:30-1:30 p.m., Resident's Conference Room.
4. Neuroradiology Conference third Monday, 8-9 a.m., PB-4 Conference Room.
5. Nephrology Conference, third Monday, noon-1 p.m., Resident's Conference Room.
6. Department of Ophthalmology Meeting, first Tuesday, 12:30-1:30 p.m., Private Dining Room.
7. Internal Medicine Study Club, ongoing second Tuesday, 6-7 p.m., PB-4 Conference Room.
8. Department of Medicine (M&M), fourth Tuesday, 1-2 p.m., Hale Pulama Mau Auditorium.
9. Endocrine Conference, first Wednesday, 12:30-1:30 p.m., Resident's Conference Room.
10. G.I. Conference, second Wednesday, 12:30-1:30 p.m., Resident's Conference Room.
11. Infectious Disease Conference, third Wednesday, 12:30-1:30 p.m., Resident's Conference Room.
12. Oncology Conference, Thursdays, 7:30-8:30 a.m., PB-5 Conference Room.
13. Hematology and Oncology Conference, first Thursday, 12:30-1:30 p.m., Resident's Conference Room.
14. Pulmonary Conference, second Thursday, 1-2 p.m., Resident's Conference Room.
15. Rheumatology Conference, fourth Thursday, 12:30-1:30 p.m., Resident's Conference Room.
16. Cardiology Conference, first Monday, 12:30-1:30 p.m., Resident's Conference Room.
17. Surgical Conference, first and second Friday, 12:45-1:45 p.m., PB-5 Conference Room. (Note: Also fourth Friday, if there are five Fridays in a month.)
18. Nutrition Conference, second Friday, bimonthly 12-1 p.m.,

*(Continued)* ▶

Private Dining Room.
19. Surgical Mortality and Morbidity Conference, last Friday, 12:45-1:45 p.m., PB-5 Conference Room.

**Maui Memorial Hospital**
1. Department of Medicine, first Thursday, 7-8 a.m., auditorium.
2. Department of Surgery, second Thursday, 7-8 a.m., auditorium.
3. Department of Obstetrics & Gynecology, third Thursday, 7-8 a.m., classroom No. 2.
4. Department of Pediatrics, fourth Thursday, 7-8 a.m., auditorium.
5. Fifth Thursday Meeting: 7-8 a.m., auditorium.
6. Tumor Board Conference; second Friday and fourth Wednesday, 7-8 a.m., multipurpose room.
7. Anesthesia Conference, second Wednesday, 7-8 a.m., multipurpose room.

**The Queen's Medical Center**
1. Anesthesiology Conference, first and second Wednesdays, 7-8 a.m., Doctors' Conference Room.
2. Emergency Medicine Conference, third Tuesday, 11:30-12:30 p.m., Ultrasound Conference Room.
3. MICU Lecture, Monday-Thursday, time varies from 2 to 3 p.m., Queen Emma Tower Conference Room 4A, 4B or 4C. (For exact schedule, call 547-4481).
4. Neuro-Radiology Conference, Mondays, 8-9 a.m., Imaging Services classroom, QET No. 2.
5. Ob/Gyn Conference, every Monday, 1-2 p.m., Kamehameha Auditorium.
6. Ophthalmology Conference, fourth Tuesday, 4:45-6 p.m., Doctor's Conference Room.
7. Orthopedic Conference, every Wednesday, 7-8 a.m., Kamehameha Auditorium.
8. Otolaryngology Conference, first Friday, 7:30-8:30 a.m., Imaging Classroom and second Friday, 7:30-8:30 a.m., Harkness Room 139.
9. Pathology Conference, every Wednesday, 7-8 a.m., Queen Emma Tower, fourth floor.
10. Pediatrics Conference, fourth Thursday, 12:30-1:30 p.m., Harkness Board Room.
11. QMC-UH Grand Rounds, Mondays, Wednesdays, and Thursdays, 12:30-1:30 p.m., (Mondays at Kamehameha Lounge and Wednesday, Thursdays at Kamehameha Auditorium.)
12. QMC-UH Medical Conference, every Friday, 8-9 a.m., Mabel Smyth Auditorium.
13. Surgical Conference, every Tuesday, 4:30-5:30 p.m., Kamehameha Auditorium.
14. Tumor Conference, every Thursday, 12:30-1:30 p.m., Cafeteria Conference Room.
15. Advanced Cardiopulmonary Life Support. For further information, contact Nursing Education 547-4373.
16. Community Consortium of AIDS Physicians in Hawaii.
    For further information, contact: David McEwan, MD, 537-2211.

**St. Francis Medical Center**
*1. Oncology Conference, Mondays, 7:30-8:30 a.m., Sullivan IV Classroom.
*2. EENT Meeting, first Tuesday, 7:30-8:30 a.m., Sullivan IV Classroom.
*3. Surgery Grand Rounds, first, second, and third and fourth Fridays, 7:30-8:30 a.m., Sullivan IV Classroom.
*4. Dept. of Medicine Morbidity and Mortality Conference, first Thursday of each month, 8-9 a.m. Sullivan IV Classroom. (For SFMC staff members only).
*5. Dept. of Medicine Conferences, Thursdays, except for first and last Thursdays of each month, 8-9 a.m., Sullivan IV Classroom.
*6. Medico-Legal Seminars, last Thursday of each month, 8-9 a.m., Sullivan IV Classroom (Everyone welcome).
*7. Hematology Conference, third Thursday, 12:30-1:30 p.m., Sullivan IV Classroom. (Contact the Education Department at 547-6410 if conference is scheduled for the month).
*8. Internal Medicine Review series, Monday, Wednesday, Thursday, Friday, 12:30-1:30 p.m., Sullivan IV Classroom. (Contact the Medical Education Office at 547-6497 for specific dates of lectures.)
9. Dept. of Surgery Morbidity and Mortality Conference, last Friday of each month, 7:30-8:30 a.m., Sullivan IV Classroom. (For SFMC staff members only).

**Straub Clinic & Hospital**
1. Associates Meeting, first Monday, 5:30-7 p.m., every other month, Doctor's Dining Room.
2. Burns Rounds, first and third Wednesdays, 4-5 p.m., Hospital 3E Conference Room.
3. Cardiac Surgery Conference, fourth Tuesday, 4:30-5:30 p.m., Doctor's Dining Room.
4. Doctors-On-Call, every month date varies, 5:45-6:45 p.m. Straub Waikiki. (For further information, call CME office, 522-3151.)
5. Ophthalmology Conference, third Thursday, 4:30-5:30 p.m., First Insurance Center, Room 950.
6. Friday Noon Conference, Fridays, 12:30-1:30 p.m., Doctor's Dining Room.
7. Gastroenterology Journal Club, fourth Tuesday, 5-6:30 p.m., Hospital 4th Floor Conference Room.
8. Neuropathology Conference, fourth Saturday, 8-9 a.m., Doctor's Dining Room.
9. Patient Care Conference, second Tuesday, 5-7 p.m., Doctor's Dining Room.
10. Surgical Morbidity and Mortality Conference, fourth Tuesday, 7-8 a.m., Doctor's Dining Room.
11. Neuropathology Conference, fourth Saturday, 8-9 a.m., Doctors Dining Room.
12. Video Conference, first Tuesday (may vary, call CME office, 522-3151 for specific dates), 12:30-1:30 p.m., Doctors Dining Room.

    For further information or to request our monthly calendar, call the Office of Professional Activities, 522-3151.

**Wahiawa General Hospital**
1. CME Program, Tuesdays, 1-2 p.m., SNF I Dining Room. For further information, call the Medical Staff Services Office at 621-8411.

    Note: All conferences are subject to change. Monthly calendars are available on request.

**Wilcox Memorial Hospital**
*1. CME Programs, Mondays, noon-2 p.m., Wilcox Confernce Rooms.

    For further information, call Medical Staff Services 245-1173.

# The relative safety of Hawaii's drinking water

Leslie K.L. Au, MSc

## The sources of drinking water

*There are two types of drinking water sources: groundwater and surface water (the latter includes catchment of rain). Surface water runs over the surface of the earth in rivers and watercourses, or is stored in lakes and reservoirs. groundwater is water that is stored below ground level; it feeds artesian wells and springs. It is important to remember that untreated groundwater may not be the same thing as treated drinking water. A contaminant in groundwater represents a threat to a drinking water source but not necessarily a threat to health, if the contaminant's concentration is decreased before it becomes available as potable.*

Each type of drinking water source has its own characteristic contamination problems. Surface water sources are more susceptible to contamination from animal or human fecal bacteria and viruses; animal waste, from cattle feedlots or poultry farms constitutes natural nitrate contamination. Artificial nitrate fertilizers are also washed down from fields by rain. In addition, humic acids from decaying plant material, when the water is chlorinated in order to disinfect against bacteria and viruses, combine with the chlorine to form chloroform and other possibly carcinogenic by-products [amazing! That chloroform is a product and that it is carcinogenic/Ed].

Underground water sources are usually shielded from contamination from bacteria, viruses, nitrates and plant acids; but are more susceptible than surface water to contamination by volatile, synthetic organic chemicals. Synthetic chemicals, being more volatile than water, pose little threat to surface-water drinking sources which are aerated, because aeration removes chemicals by natural evaporation into the atmosphere. Underground water is less aerated and not open to the atmosphere, so that contamination persists.

Both surface and groundwater in various locations across the nation have been found to be contaminated by nitrates, fluoride, arsenic, metals (barium, cadmium, chromium, lead, mercury, selenium and silver), and radionuclides. Fortunately, none of these contaminants is found in Hawaiian groundwater which is used for public drinking water, except for very low levels of nitrate, probably from fertilized fields, and fluoride in one or two wells.

Toxicologist
Dept. of Health
Hazard Evaluation and Emergency Response (HEER) Office
Honolulu, Hawaii

Here in Hawaii, groundwater currently supplies more than 90% of the total household water use, approaching 200-million gallons of water per day. Over 90% of the people who are drinking from public water supplies are drinking groundwater. According to the Hawaii Department of Land and Natural Resources, groundwater sources supply approximately 63% of the daily household use on Maui, 64% on Hawaii, 91% on Kauai, and at least 90% on Oahu, Lanai, Molokai, and Niihau. Very little comes from surface water sources such as streams, reservoirs and roof catchments, which means that drinking water contamination by bacteria, viruses, or disinfection by-products are and will be very rare. The predominant use of groundwater means that most of the threats to drinking water in this State are and will be volatile, synthetic organic chemicals.

Even though some groundwater sources are nearly 1000 feet below the surface, 14 different pesticides or industrial solvents have been confirmed as being present in Hawaii's groundwater in various locations. Positive identifications were confirmed by different tests, resampling and analyses, or by the validation of historic data. Listed are the 14 contaminants, together with the possible effects on health from an overdose (Table 1).

This is followed by maps of the locations of confirmed groundwater contamination by man-made chemicals, together with tables of the levels of contamination present as of June 1989. Contamination by natural sources, such as nitrates from animal farms, are not shown on the maps. The EPA guidance levels which are included in the tables for comparison are current as of May 1990 (Tables 3 through 7).

## Origin of guidance levels and risk assessment

In the Middle Ages, Paracelsus (1493-1541) stated the axiom of toxicology: "All substances are poisons; there is none which is not a poison."[2]

All contaminants which might be ingested with drinking water are possibly toxic, given a sufficient dose. Therefore, the identification of a possibly hazardous chemical in groundwater is important, and so is its concentration. If a contaminant in Hawaiian groundwater is not carcinogenic, then proper treatment and removal can reduce its concentration below the threshold at which one could expect significant effects on health. If a contaminant is suspected to be carcinogenic, however, then it is generally assumed that there is no threshold in

*(Continued)* ▶

**TABLE 1: POSSIBLE HEALTH EFFECTS AND SOURCES OF GROUNDWATER CONTAMINATION**

| Common Name | Possible Noncarcinogenic Effects from Ingestion by Humans or Animals[1] | EPA(CAG) Carcinogen Rating[2] | Potential Contamination Sources |
|---|---|---|---|
| Ametryn | Liver damage | Unclassified | Herbicide |
| Atrazine | Heart and liver damage; fetal/child development retarded | Possible | Herbicide |
| Carbon Tetrachloride | Liver, kidney, and lung damage | Probable | Solvent, dry cleaning agent |
| 1,2,3 - Dibromochloropropane (DBCP) | Male reproductive system, liver, and kidney damage | Probable | Pesticide (soil fumigant) |
| 1,1-Dichloroethylene (DCE) | Central nervous system depression; a heart effect; liver and kidney damage | Possible | Solvent |
| 1,2-Dichloropropane (DCP) | Gastrointestinal irritation, liver and kidney damage | Probable | Pesticide, solvent |
| Dieldrin | Liver, central nervous system, kidney and adrenal gland damage | Probable | Pesticide |
| Ethylene dibromide (EDB) | Male reproductive system, liver gastrointestinal, and adrenal gland damage | Probable | Gas addictive, soil fumigant, solvent |
| Hexazinone | No known effects | Unclassified | Herbicide |
| Lindane | Nerve damage and central nervous system seizures; liver and kidney damage; suppression of the immune system | Possible | Insecticide |
| Simazine | Liver, kidney, and brain damage | Possible | Herbicide |
| Tetrachloroethylene (PCE) | Central nervous system depression; liver and kidney damage | Probable | Solvent, dry cleaning agent |
| Trichloroethylene (TCE) | Central nervous system depression; a heart effect; liver and kidney damage | Probable | Solvent |
| 1,2,3-Trichloropropane (TCP) | Decreased red blood cells; liver and kidney damage | Unclassified | Solvent, trace contaminant in certain pesticides |

[1] Based on Health Advisories from the USEPA's Office of Drinking Water.
[2] Based on estimations from the USEPA's Health Hazard Assessment Group.

terms of effects on health. There will always be some theoretical probability of carcinogenesis, because there is no technique or treatment method that can remove 100% of a chemical contaminant.

Once the concentration of a contaminant in drinking water is determined, it can be compared with a standard. These guidelines can be obtained in print from the U.S. Environmental Protection Agency's Office of Drinking Water, or by a computer link from the Environmental Protection Agency (EPA)'s Integrated Risk Information System (IRIS). Every chemical listed on the IRIS is reviewed by the EPA monthly and revised as often as new data are obtained or risk-assessment procedures are refined. Here in the Hawaii Department of Health's Hazard Evaluation and Emergency Response (HEER) Office, updated information on the IRIS is reviewed almost every week.

In the U.S., the EPA, the National Institutes of Health (including the National Toxicology Program and the National Institute of Environmental Health Sciences), and the U.S. Public Health Service (including the Centers for Disease Control and the National Institute for Occupational Safety and Health) conduct research themselves, or finance the research projects at universities and certain private laboratories. The EPA's Office of Pesticides and Toxic Substances also reviews and contributes health-effects information from tests conducted by pesticide companies who want to register their pesticides for sale in the U.S.

At EPA, the Health Hazard Assessment Group (HHAG) collects data from research conducted both in the United States and abroad. After thorough review to select the one best toxicity study that has been done on each chemical contaminant, the HHAG then estimates reference doses (RfD) or carcinogenic potency factors ($q_1^*$) which are used by the Office of Drinking Water to formulate its guidelines for noncarcino-

**TABLE 2: DEFINITIONS OF APPLICABLE DRINKING WATER STANDARDS**

"MCL" means a maximum contaminant level or the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. MCLs are the only federally enforceable drinking water standard. A "pMCL" means that EPA has proposed a MCL for that contaminant.

A "Lifetime Health Advisory" (LHA) describes a non-regulatory concentration of a drinking water contaminant at which adverse health effects would not be anticipated to occur over a lifetime exposure of 70 years duration. The advisories are based on data describing non-carcinogenic risk from such exposure.

"10(-6)" indicates those chemicals which EPA considers to be potential human carcinogens, EPA estimates a "cancer risk level" as the level at which an individual who consumes water over his or her lifetime (70 years) would have no more than a one-in-a-million chance of developing cancer as a direct result of drinking water containing the contaminant.

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genic and carcinogenic contaminants, respectively.

In the case of a noncarcinogenic substance, classic toxicology methods can be applied; risk estimates have relatively firm foundations. A reference dose (RfD) is expressed in mg/kg/day, or milligrams of toxic substance absorbed per kilogram of body weight per day. RfD is a new acronym for the old ADI, Acceptable Daily Intake. The following is an example of the calculation of a Lifetime Health Advisory (LHA) guidance level, using atrazine, a contaminant listed in Table 1.

Five studies were considered in the development of the LHA, 3 using rats and 2 using dogs. In these studies, dogs exhibited toxic responses at lower doses than rats, and therefore the guidance levels derived from the dog studies were expected to be more protective of public health. A 2-year dog-feeding study (Woodard, 1964) was initially used for the calculation of the RfD and LHA, but since there was a lack of information on the purity of the test material and the hematological data were incomplete, a 1-year dog-study (Ciba-Geigy, 1987) was considered to be better because the researchers used 97%-pure, technical atrazine. The No Observed Adverse-Effect Level (NOAEL) in this study at 0.48 mg/kg/day, which was based on the absence of cardiac pathology or any other adverse clinical, hematologic, biochemical or histopathologic effect in dogs, and was supported by the other 4 studies. This animal NOAEL of 0.48 mg/kg/day was divided by the standard National Academy of Sciences (NAS) / EPA uncertainty factor of 100 for a well-conducted animal study, to give a human RfD of 0.0048 mg/kg/day. The uncertainty factors are 10, to adjust for intra-species variation in sensitivity, multiplied by 10, to adjust for potential inter-species variation in sensitivity, possibly multiplied by other factors of 10 (if a study was not well-conducted and if there was reason to doubt the findings, or if there was a potential for synergism).

A risk assessment based on a well-conducted human study might have an uncertainty factor of only 10, whereas an emergency-situation risk assessment based on an unsupported, suspect animal study might have an uncertainty factor of 1000 or larger.

Once the human RfD is obtained, the calculation proceeds in a conventional manner:

$$\frac{(0.0048 \text{ mg/kg/day})\ (70 \text{ kg})\ (0.20)}{(2 \text{ liters/day})\ (10)} = 0.003 \text{ mg/liter} = \text{LHA}$$

where

0.0048 mg/kg/day = RfD

70 kg = assumed average body weight of an adult;

0.20 = assumed 20% of total intake from drinking water (assumed 80% of total intake from residues in food);

2 liters/day = assumed daily adult water consumption; and

10 = additional uncertainty factor, to account for possible carcinogenicity of atrazine which was indicated in 1 of the 3 rat studies (Ciba-Geigy, 1986).

Similar findings of mammary tumors in female rats dosed with 3 pesticide analogs of atrazine (simazine, propazine, and terbutryn) support the possible carcinogenicity of atrazine.

Therefore, the Lifetime Health Advisory was determined to be 0.003 mg/L, or 3 micrograms per liter, which is the guidance level stated in the Tables above.[4]

Estimating the risk from exposure to confirmed or suspected carcinogenic substances is not as conventionally simple as estimating an LHA. In the National Academy of Sciences' 1977 *Drinking Water and Health, volume 1,* 4 basic assumptions for assessing the irreversible human effects of long and continued low-dose exposure to carcinogenic substances are stated:

Principle 1: Effects in animals, properly qualified, are applicable to man.

Principle 2: Methods do not now exist that establish a threshold for long-term effects of toxic agents.

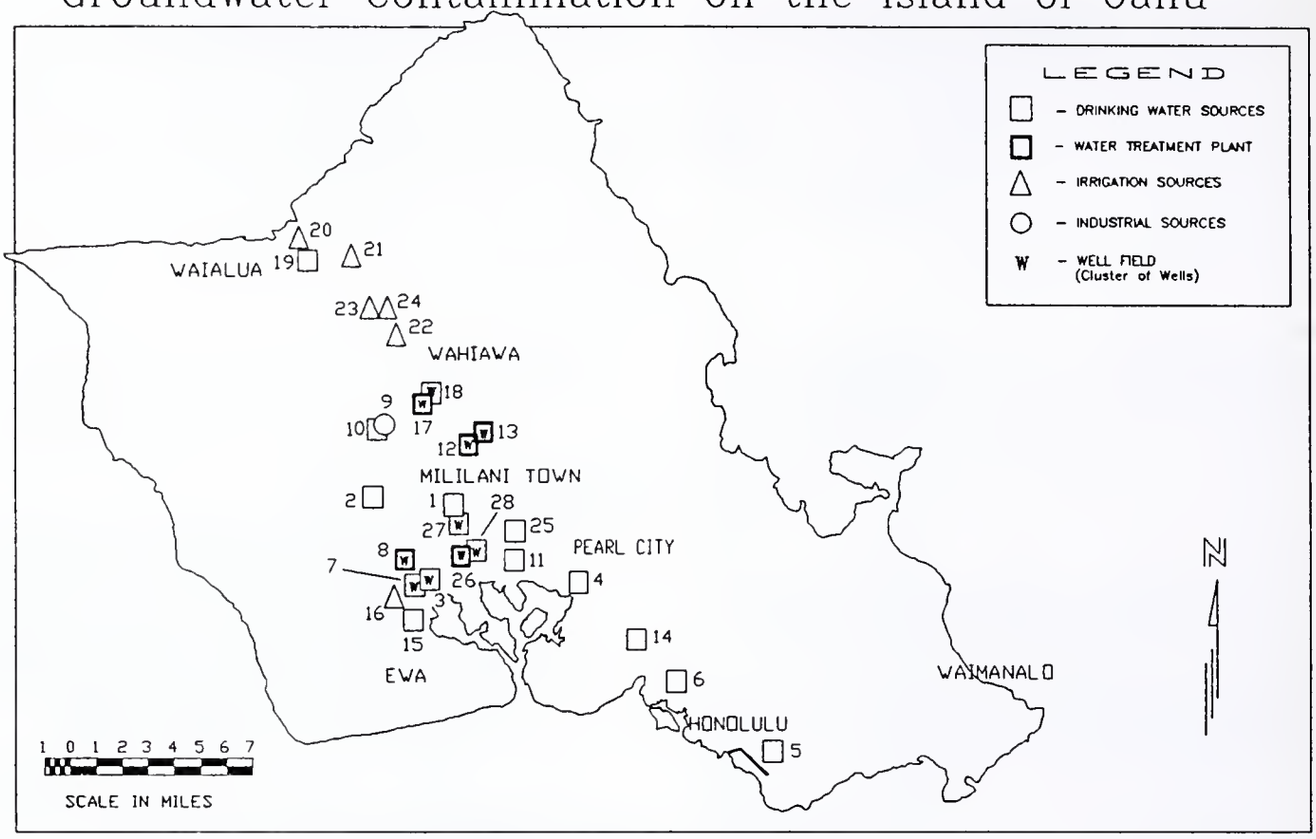
Principle 3: The exposure of experimental animals to toxic agents in high doses is a necessary and valid method of discovering possible carcinogenic hazards in man.

Principle 4: Materials should be assessed in terms of human risk, rather than as "safe" or "unsafe"[3].

Since cancer is a disease with several different causes and processes, many of which are unknown, the prediction of possible cancer risk from low environmental doses, extrapolated from very high experimental doses, requires the use of imperfect models. There are at least 19 different cancer models, none of which can be experimentally verified. These models are divided into 3 categories (a) mechanistic (eg, 1-hit, multi-hit, multistage); (b) tolerance distribution (eg, probit, logit, Weibull); and (c) time-to-occurrence (eg, lognormal, Weibull). The mechanistic models assume that all individuals are equally susceptible to cancer, which we know is not true, such that cancer risk-estimation becomes a simple mathemati-

*(Continued)* ▶

## Groundwater Contamination on the Island of Oahu




This Map Contains the Last Confirmed Results From Contaminated Groundwater Wells

| NO. | CONTAMINANT | | OETECTEO LEVEL (in ppb) | APPLICABLE ORINKING WATER STANOAROS (in ppb) | |
|---|---|---|---|---|---|
| 1 | TCE | | 0.70 | 5.0 | MCL |
| 2 | OBCP | | 0.01 | 0.0007 | $10^{-6}$ |
| | PCE | | 0.22 | 5.0 | pMCL |
| 3 | Atrazine | | 0.114 | 3.0 | LHA |
| | TCP | | 0.20 | 0.06 | LHA |
| 4 | PCE | | 0.03 | 5.0 | pMCL |
| 5 | PCE | | 0.03 | 5.0 | pMCL |
| 6 | Oieldrin | | 0.008 | 0.002 | $10^{-6}$ |
| 7 | Atrazine | | 0.083 | 3.0 | LHA |
| | TCP | | 0.65 | 0.06 | LHA |
| 8 | OBCP | influent | 0.02 | 0.0007 | $10^{-6}$ |
| | | effluent | <0.02 | | |
| | TCP | influent | 0.65 | 0.06 | LHA |
| | | effluent | <0.20 | | |
| 9 | PCE | | 1.65 | 5.0 | pMCL |
| | TCE | | 3.70 | 5.0 | MCL |
| 10 | Carban Tetrachloride | | 0.69 | 5.0 | MCL |
| | DCE | | 0.20 | 0.06 | $10^{-6}$ |
| | TCE | | 0.83 | 5.0 | MCL |
| | PCE | | 2.60 | 5.0 | pMCL |
| 11 | PCE | | 0.3 | 5.0 | pMCL |
| 12 | DBCP | influent | 0.07 | | |
| | | effluent | <0.02 | 0.0007 | $10^{-6}$ |
| | DCP | influent | 0.64 | | |
| | | effluent | --- | 0.6 | $10^{-6}$ |
| | TCP | influent | 1.50 | | |
| | | effluent | <0.20 | 0.06 | LHA |
| 13 | OBCP | influent | 0.07 | | |
| | | effluent | <0.02 | 0.0007 | $10^{-6}$ |
| | OCP | influent | 0.74 | | |
| | | effluent | --- | 0.6 | $10^{-6}$ |
| | TCP | influent | 1.50 | | |
| | | effluent | <0.20 | 0.06 | LHA |

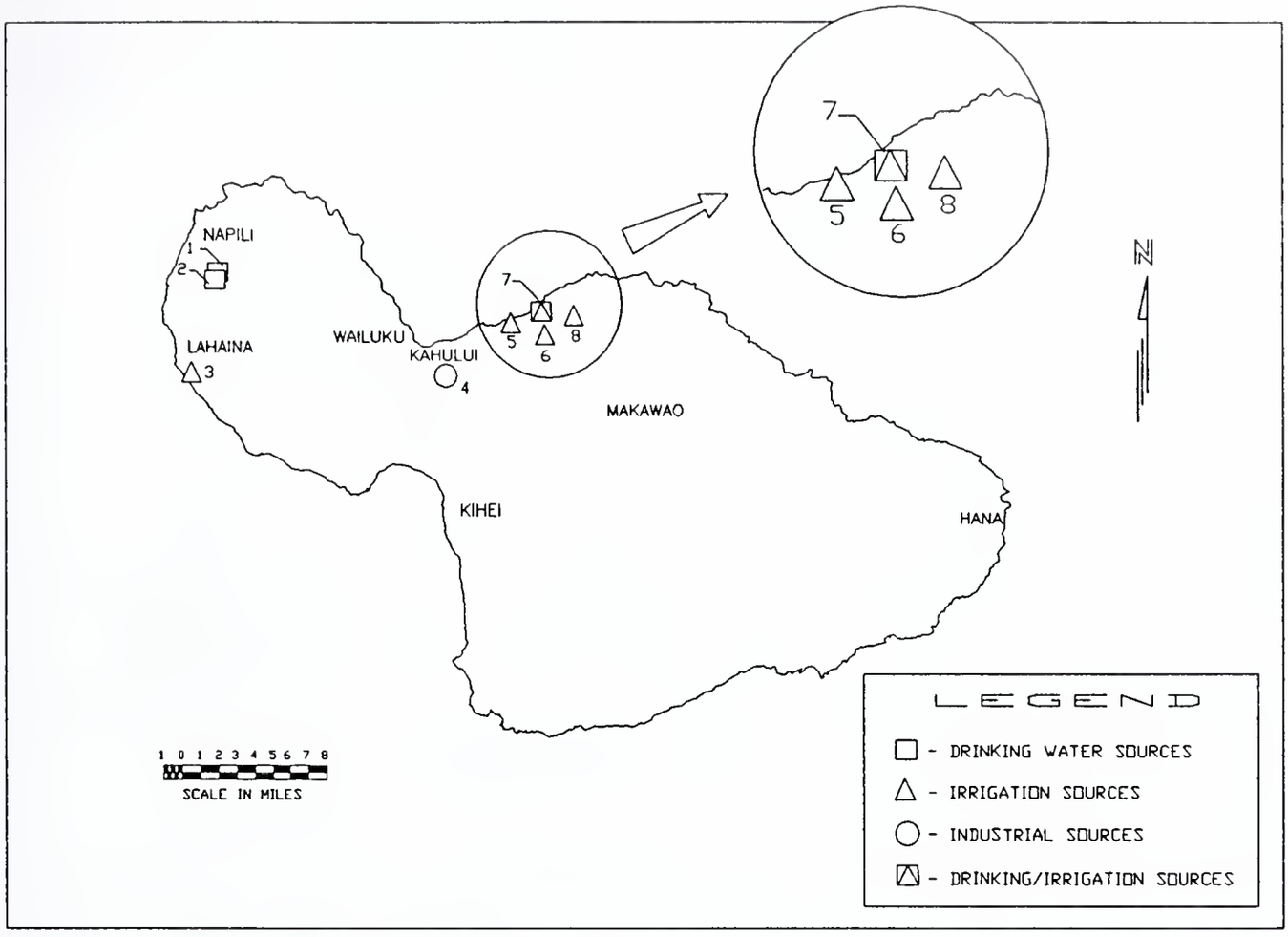
| NO. | CONTAMINANT | | OETECTEO LEVEL (in ppb) | APPLICABLE ORINKING WATER STANOAROS (in ppb) | |
|---|---|---|---|---|---|
| 14 | Oieldrin | | 0.009 | 0.002 | $10^{-6}$ |
| 15 | Atrazine | | 0.035 | 3.0 | LHA |
| 16 | Atrazine | | 0.100 | 3.0 | LHA |
| 17 | TCE | influent | 8.50 | | |
| | | effluent | <1.00 | 5.0 | MCL |
| | PCE | influent | 0.37 | | |
| | | effluent | <1.00 | 5.0 | pMCL |
| 18 | Carban Tetrachloride | | 0.58 | 5.0 | MCL |
| | PCE | | 0.38 | 5.0 | pMCL |
| 19 | TCP | | 0.21 | 0.06 | LHA |
| 20 | Lindane | | 0.001 | 0.03 | $10^{-6}$ |
| 21 | OBCP | | 0.01 | 0.0007 | $10^{-6}$ |
| | TCP | | 0.29 | 0.06 | LHA |
| 22 | DBCP | | 0.02 | 0.0007 | $10^{-6}$ |
| | TCP | | 0.37 | 0.06 | LHA |
| 23 | OBCP | | 0.115 | 0.0007 | $10^{-6}$ |
| 24 | DBCP | | 0.01 | 0.0007 | $10^{-6}$ |
| | TCP | | 0.43 | 0.06 | LHA |
| 25 | DBCP | | 0.024 | 0.0007 | $10^{-6}$ |
| | TCP | | 0.21 | 0.06 | LHA |
| 26 | EOB | influent | 0.055 | | |
| | | effluent | <0.02 | 0.0004 | $10^{-6}$ |
| | TCP | influent | <0.20 | | |
| | | effluent | <0.20 | 0.06 | LHA |
| 27 | TCE | | 0.55 | 5.0 | MCL |
| | TCP | | 0.25 | 0.06 | LHA |
| 28 | TCP | | 0.20 | 0.06 | LHA |

NOTE: Oue to the number of wells in close proximity to each other, some sites are represented by wellfields and may contain several wells.
Possible natural contaminants such as nitrates have not been included.

Department of Health

May 1990

# Groundwater Contamination on the Island of Maui




This Map Contains the Last Confirmed Results From Contaminated Groundwater Wells

| NO. | CONTAMINANT | DETECTED LEVEL (in ppb) | APPLICABLE DRINKING WATER STANDARDS (in ppb) | |
|---|---|---|---|---|
| 1 | Trichloropropane | 0.200 | 0.06 | LHA |
| 2 | Trichloropropane | 0.300 | 0.06 | LHA |
| 3 | Atrozine | 0.110 | 3.0 | LHA |
| 4 | Atrazine | 1.000 | 3.0 | LHA |
| | Ethylene Dibromide | 0.040 | 0.0004 | $10^{-6}$ |
| 5 | Atrazine | 0.600 | 3.0 | LHA |
| 6 | Ethylene Dibromide | 0.028 | 0.0004 | $10^{-6}$ |
| 7 | Trichloropropane | 0.430 | 0.06 | LHA |
| 8 | DBCP | 0.091 | 0.0007 | $10^{-6}$ |
| | Ethylene Dibromide | 0.067 | 0.0004 | $10^{-6}$ |
| | Trichloropropane | 0.430 | 0.06 | LHA |

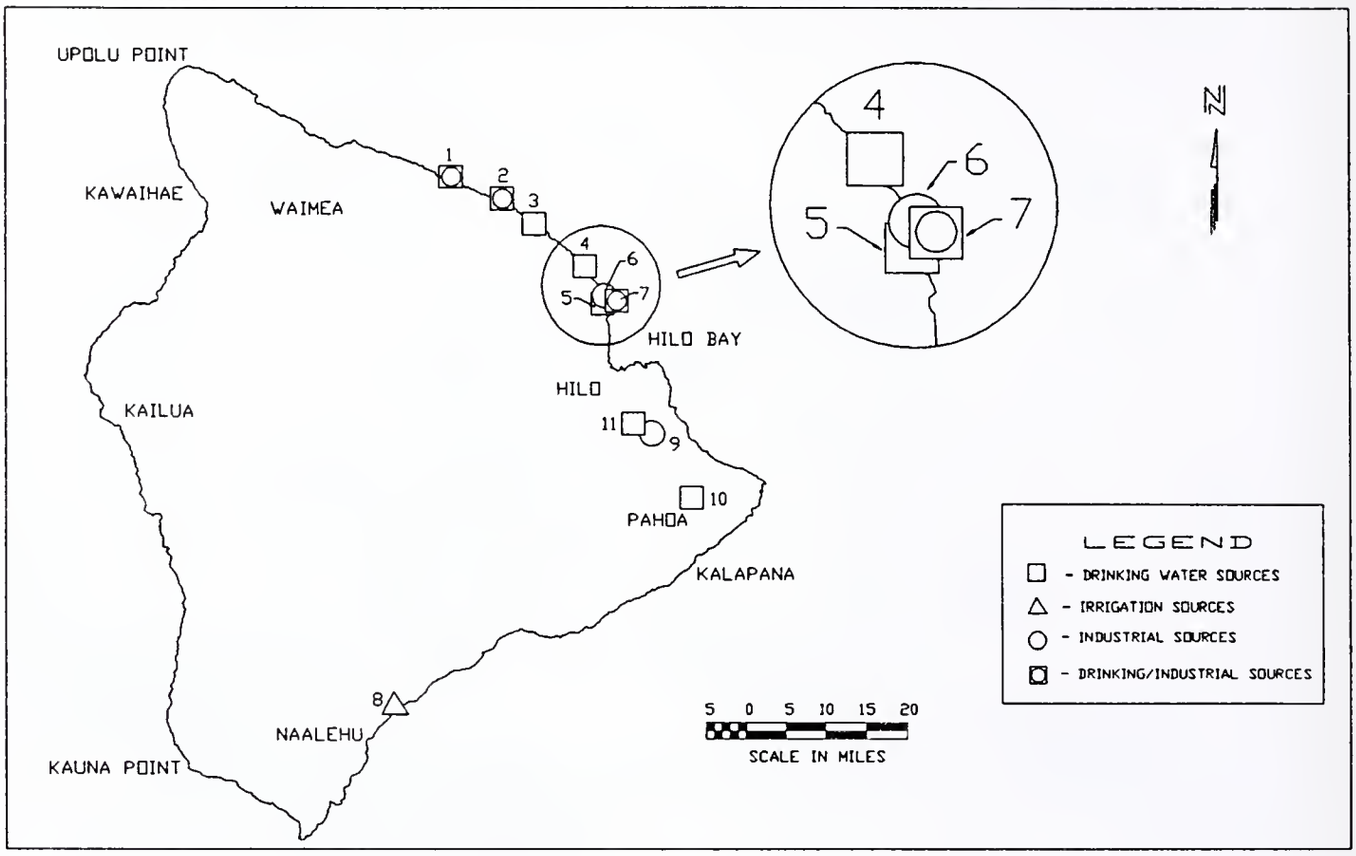
Department of Health

May 1990

NOTE: Possible natural cantaminants such as nitrates have not been included

*(Continued)* ▶

## Groundwater Contamination on the Island of Hawaii



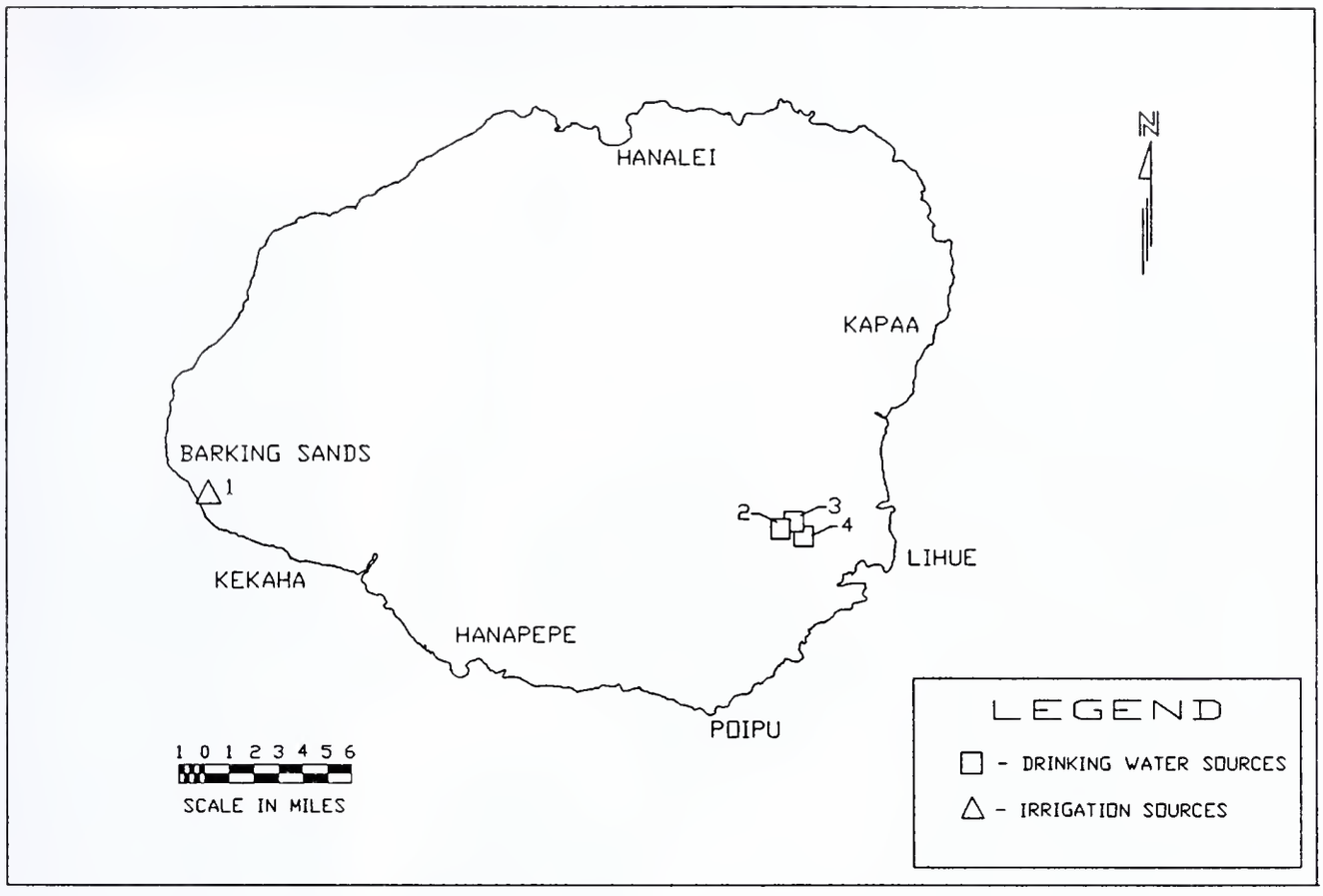

This Map Contains the Last Confirmed Results From Contaminated Groundwater Wells

| NO. | CONTAMINANT | DETECTED LEVEL (in ppb) | APPLICABLE DRINKING WATER STANDARDS (in ppb) | |
|---|---|---|---|---|
| 1 | Atrazine | 0.270 | 3.0 | LHA |
| | Hexazinone | 0.110 | 200.0 | LHA |
| 2 | Atrazine | 0.270 | 3.0 | LHA |
| 3 | Atrazine | 0.400 | 3.0 | LHA |
| | PCE | 0.130 | 5.0 | pMCL |
| 5 | Atrazine | 0.300 | 3.0 | LHA |
| | Hexazinone | 0.060 | 200.0 | LHA |
| 6 | Atrazine | 0.400 | 3.0 | LHA |
| | Hexazinone | 0.090 | 200.0 | LHA |
| 7 | Atrazine | 1.300 | 3.0 | LHA |
| | Hexazinone | 0.090 | 200.0 | LHA |
| 8 | Atrazine | 0.140 | 3.0 | LHA |
| 9 | Atrazine | 0.260 | 3.0 | LHA |
| | Ametryn | 0.880 | 60.0 | LHA |
| 10 | Atrazine | 0.300 | 3.0 | LHA |
| 11 | Atrazine | 0.100 | 3.0 | LHA |

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NOTE: Possible natural contaminants such as nitrates have not been included.

# Groundwater Contamination on the Island of Kauai




This Map Contains the Last Confirmed Results From Contaminated Graundwater Wells

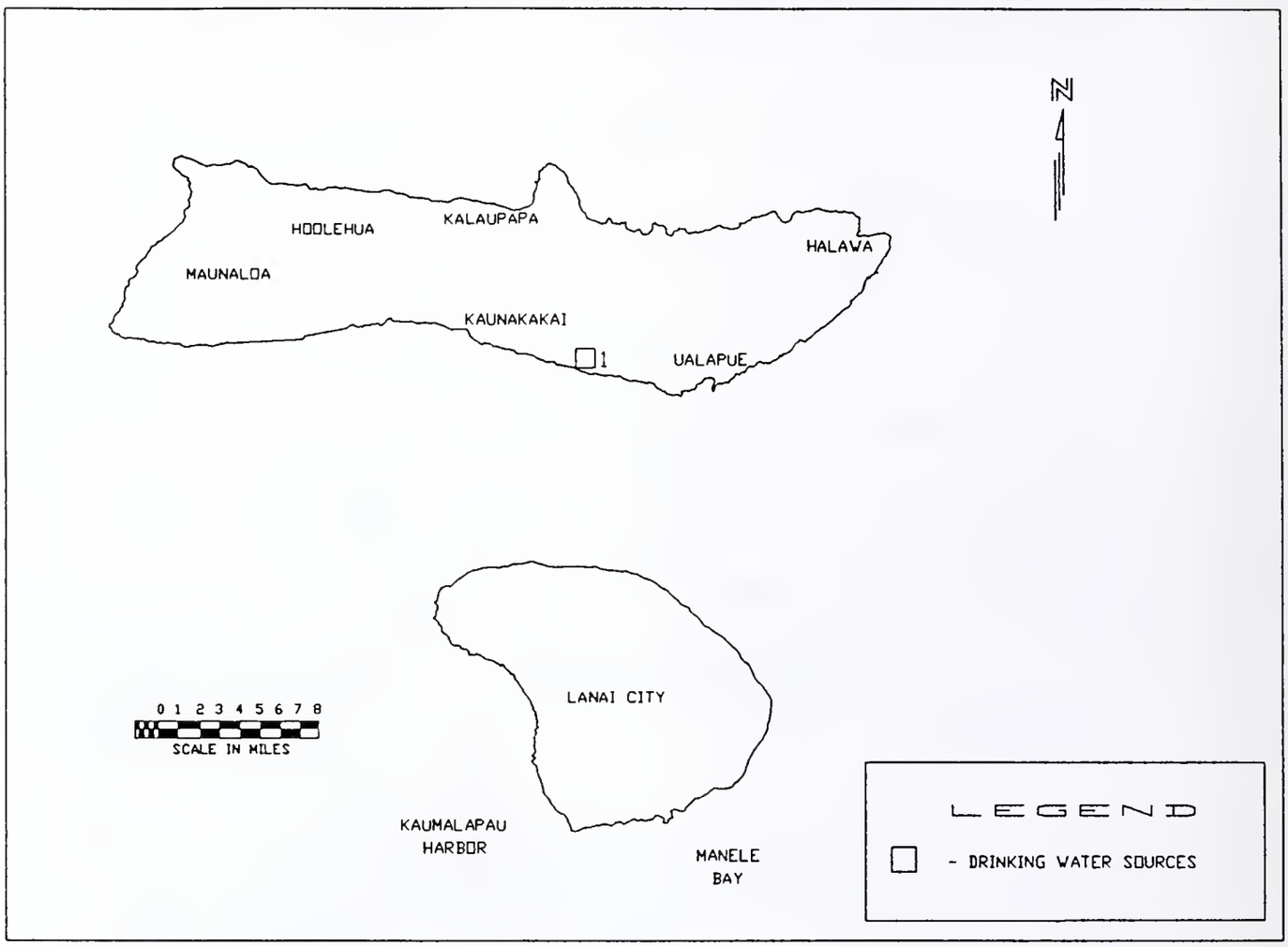
| NO. | CONTAMINANT | DETECTED LEVEL (in ppb) | APPLICABLE DRINKING WATER STANDARDS (in ppb) | |
|---|---|---|---|---|
| 1 | Atrazine | 2.500 | 3.0 | LHA |
| | Ametryn | 0.800 | 60.0 | LHA |
| | Simazine | 0.200 | 1.4 | LHA |
| 2 | Atrazine | 0.060 | 3.0 | LHA |
| 3 | Atrazine | 0.200 | 3.0 | LHA |
| 4 | Atrazine | 0.100 | 3.0 | LHA |

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NOTE: Possible natural cantaminants such as nitrates have not been included

*(Continued)* ▶

## Groundwater Contamination on Molokai and Lanai




This Map Contains the Last Confirmed Results From Contaminated Groundwater Wells

| NO. | CONTAMINANT | DETECTED LEVEL (in ppb) | APPLICABLE DRINKING WATER STANDARDS (in ppb) |
|---|---|---|---|
| NO CONFIRMED CONTAMINANTS DETECTED | | | |

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NOTE: Possible natural contaminants such as nitrates have not been included

*(Continued on page 80)* ▶



*Wristwatch Pager*



*Sensar Digital Pager*

*BPR 2000 Digital Pager*



*Bravo Digital Pager*





*Diamond Tel 95 Transportable Cellular Phone*



*Bravo Tone Pager*



*Diamond Tel 99X Compact Cellular Phone*
*Actual Size: 6.3"x 2.2"x .93"*

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cal exercise. The tolerance distribution models attempt to allow for individual sensitivity to carcinogens, but the mathematics are difficult. The time-to-occurrence models are useful when attempting to predict the cancer risk from a chemical which causes cancer after only a relatively short duration of exposure[1,5].

The one-hit model generates the lowest, most conservative, most health-protective guidance level, but the one-hit model appears to be an appropriate risk predictor only for cancers caused by radiation. The EPA and NAS believe that the most appropriate risk predictor for cancers caused by most chemicals is the modified multistage model, which is not the most conservative model. The modified multistage model was used to estimate all of the EPA guidance levels of $10^{-6}$ in the Tables, except for that of ethylene dibromides (EDB). EDB was used as a fumigant in grain silos and was a soil fumigant for nematodes in pineapple fields, and its risk was estimated using a combination of the modified multistage and Weibull models because EDBs caused cancer in animals after an exposure duration of less than a lifetime. Cancer-risk estimation models extrapolate a straight line from high-dose carcinogenesis data in a straight line and the slope of the line is the cancer potency factor, $q_1^*$, or "q-star." The q-star multiplied by the absorbed daily dose of a carcinogen gives the cancer risk of a 70-year lifetime's exposure.

There are at least 7 conservative assumptions built into EPA's estimates of carcinogenic risk. For example, the assumptions regarding a daily intake of 2 liters of water and 100% intestinal absorption of an ingested contaminant will overestimate the cancer risk by 2 to 100+. The extrapolation of animal data to humans on the basis of surface area, rather than body weight, will overestimate the cancer risk by 5 to 13[5].

### Prevention of future contamination

There are many federal, State and county programs that are presently involved with the protection of groundwater quality in Hawaii. For example, the U.S. EPA administers a sole-source aquifer program; the State Department of Land and Natural Resources and the Honolulu Board of Water Supply administer a watershed management program; the State Department of Agriculture regulates the large-scale use of pesticides and is working with the University of Hawaii to develop ways to estimate how rapidly chemicals leach through soils in different locations on every island. The State Department of Health administers an underground injection control program, formulates the overall groundwater quality protection strategy and, of course, attempts to minimize the health risk of contaminants in drinking water.

In an agricultural state such as California, great quantities of pesticides have been deliberately applied to, or accidentally spilled on the ground over the years. Once pesticides have leached below the 3-foot-deep "vadose zone", where microbes which can degrade chemicals live, there is no further degradation unless a pesticide is susceptible to hydrolysis. One University of California (Riverside) groundwater expert has estimated that rainwater is leaching pesticides downward through California's sandy soils at a rate of 6 to 12 inches per year. Unless a layer of impermeable clay arrests the leaching, this could threaten water supplies, which are only 20 feet below the surface in some places, in about 20 years. A similar potential for future contamination exists here in Hawaii. Hawaii's greater rainfall increases the threat, but Hawaii's clay soils and deeper drinking-water aquifers decrease the threat. However, the drilling of wells through clay layers provides a conduit for swift leaching of pesticides into groundwater, which is probably what occurred in Kunia on Oahu. This means that pesticides applied many years before protective programs existed move slowly downward, so that prevention of future contamination of Hawaii's groundwater sources may already be too late. On the reassuring side, however, surveillance and protection of the treated drinking water which is served to people will continue to improve.

### Conclusion

This paper has attempted to catalogue the contamination of Hawaii's groundwater source by man-made organic chemicals, comparing them to EPA guidance levels and explaining the origin of those standards. In the opinion of this writer, having compared the 1989 levels of contamination to the guidance levels, and having had EPA experience with the greater varieties of drinking water contamination found in other states, Hawaii has relatively the safest drinking water in the nation. Also, given that the EPA and the states oversee drinking water quality in the U.S. better than the way the appropriate agencies in other countries do it, Hawaii may have one of the safest drinking water supplies in the world.

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# Environmental Epidemiology: An Introduction to its Merits and Problems

Gertraud Maskarinec MD MPH

*During the course of this century the science of epidemiology has expanded its interest from only infectious diseases to include a wide variety of diseases and health events. It has become more of a systematic methodology which can be used for the description and the analysis of diverse health events. The basic assumption of epidemiologic research is that diseases do not occur randomly, but in patterns which reflect the underlying causes. By studying the patterns etiologic factors can be discovered. Recently, Environmental Epidemiology has been emerging as a new subspecialty. In 1989 the newly founded International Society for Environmental Epidemiology held its first Annual Meeting; its second meeting was held in August 1990 in Berkeley, California*

This paper will first illustrate the usefulness of epidemiology in environmental research and then discuss some of the problems of applying epidemiologic methods to environmental issues.

Environmental epidemiology concerns itself with very diverse problems. They include ionizing radiation, electromagnetic radiation, hazard waste sites, pesticides and other chemicals, asbestos, heavy metals, radon, fluoride in water, aflatoxins in food, and many others.

Many of today's environmental concerns first came to public attention the result of reports of disease clusters, or so called outbreaks. Well-documented examples are leukemia in Hiroshima and Nagasaki, sterility among farm workers who handled DBCP in California, lung cancer and mesothelioma in asbestos workers, Minimata Disease in Japan caused by methyl mercury in fish, and hepatomas in areas of the world where food was stored improperly and contained aflatoxins.

In developing countries, environmental epidemiology is mostly concerned with water and sanitation issues, including many diseases which, in developed countries, are considered to be infectious epidemiology.

State Department of Health
Hazard Evaluation Emergency Response (HEER)
5 Waterfront Plaza, Suite 250
500 Ala Moana Bld
Honolulu, HI 96813

Epidemiologic research has two objectives in respect to these problems. The first one is to identify an excess frequency of the health event under discussion and to connect it with a possible cause. The second one is to investigate the possible health effects of exposure to a particular agent.

Since clusters can also occur by chance alone, epidemiologic research must determine whether the number of observed cases in a certain population is significantly higher than expected. This involves the usual epidemiologic methods of comparing the observed as against the expected number of cases in a population. In environmental issues, on the other hand, the determination of the population at risk poses specific problems, eg to decide who in the neighborhood of a hazardous waste site or a nuclear power plant is actually at risk. The situation becomes even more complicated when different levels of exposure are to be defined. Misclassification of exposure is a common occurrence. The definition of the outcome, ie a particular disease, also includes specific problems. Often the event is rare (leukemia), or non-specific (dizziness or rashes), or has a long latency period. Publicity might lead to an increase in reporting of the event in the affected area, as compared to the incidence in the general population.

The main difficulty in establishing a causal relationship between a hazard and a disease can be epitomized as two events occurring at the same time or place but not necessarily causally related, even if a statistically significant association exists between them.

It cannot be emphasized enough that surveys which ascertain both risk factors and suspected outcomes at the same time are consequently unable to establish a temporal relationship and, therefore, cannot determine a causality between the two events.

The same is true for ecologic studies. Comparing rates of disease and the occurrence of the suspected risk factors in different geographic areas can suggest associations, but they can never prove a causal relationship. Case control and prospective cohort studies are needed to establish temporality. This is often time consuming and expensive. Due to the rarity of some diseases, the studies have to be very extensive in order to discover a significant relationship. For example, to find a threefold increase in a disease which has a background inci-

*(Continued on page 99)* ▶

# Risk of Death Among Honolulu Fire Fighters

Gary Grimes MD MPH*
Diane Hirsch PhD**
David Borgeson MS***

To examine possible health risks associated with fire fighting, a 20-year Proportionate Mortality Ratio (PMR) study was conducted involving all male fire fighters with at least one year of service in the City of Honolulu Fire Department. The observed cause of death, as determined by the death certificates, was compared statistically to the expected numbers of deaths for all males over age 20 in Hawaii's general population. Significant increases in risk of death were found for brain cancer (Risk Ratio = 3.78), prostate cancer (Risk Ratio = 2.61), and cirrhosis of the liver (Risk Ratio = 2.3). A significant decrease in mortality was found for lung disease with a risk ratio of 0.37. No deaths were attributed to suicide nor to a category which included allergic, endocrine and nutritional diseases. Since fire fighters are known to suffer exposure to carcinogens and toxins, additional studies would be helpful in order to clarify possible risks to health associated with fire fighting on a long-term exposure basis.

## Introduction

Occupational mortality among fire fighters has not been the central focus in many epidemiologic studies. Fire fighters are exposed to a variety of potentially toxic materials such as benzene, acrolein, metal fumes, hydrogen chloride,and other irritant gases, albeit on an intermittent basis. The increased use of synthetic building materials has recently raised concerns as to possible health effects from exposure to the combustion of such products[1,2]. The consequences from these exposures may include both acute and chronic effects on health, such as respiratory disease, cardiovascular disease and certain types of cancer[3-6]. Unfortunately, little quantitative information is currently available on such exposures.

Our study evaluated the mortality of 205 male fire fighters of the City and County of Honolulu from 1969 to 1988. The accuracy of the mortality records enabled us to evaluate cause-specific mortality, both by duration of employment and ethnicity. Since Hawaiians and Caucasians account for nearly 90% of the study population, ethnic comparisons were limited to these two groups.

## Methods

On the basis of death certificates, the distribution of deaths by cause was compared between that of fire fighters and that of other males older than 20-years-of-age in the State of Hawaii. The observed percentage of firemen deaths for each cause from 1969-1988 was compared to the expected. For example, 6.8% of all male deaths in Hawaii were due to cancer of the respiratory system. The expected number of deaths in the fireman population due to this cause, therefore, would be 0.068 x 205 = 14 deaths.

Risk ratios were calculated as the ratio of the percent of fireman deaths due to that cause divided by the percent of other male deaths in Hawaii due to that cause. Taylor's series 95% confidence intervals were computed automatically by a statistical software package[7]. If there were no deaths among the firemen ascribed to a certain cause, then confidence intervals were not calculated.

The significance of the ratios of firemen to other men was analyzed by the chi-square method. Comparisons of firemen to other men in Hawaii's general population must be approached with caution, since the ethnic composition of the firemen is different from that in the general population. The ethnic composition of the firemen population is predominantly either Caucasian or Hawaiian. Accordingly, specific comparisons on the basis of ethnicity were also made and the results are presented separately.

## Results

The risk ratios in cause-specific mortality in fire fighters are shown in Table 1. Cardiovascular mortality showed a borderline elevation, with a risk ratio of 1.16 (95% CI = 1.10 - 1.32). Overall respiratory mortality, on the other hand, showed a significantly decreased RR of 0.37 (95% CI = 0.17 - 0.81). Cirrhosis of the liver showed a modest elevation at 2.30 (95% CI = 1.21 - 4.37 ). There were no reported deaths in either the suicide or the allergic, endocrine and nutritional disease categories as compared to the expected general population rates of 2.44 and 2.75, respectively. As for malignant neoplasms, cancer of the prostate showed an elevated risk ratio of 2.61 (95% CI = 1.38 - 4.97). Cancer of the brain had

* Gary Grimes MD MPH
Family Practice and Preventive Medicine
500 East Olive
Burbank, California 91501
** Diane Hirsch PhD
Epidemiology/Biostatistics
Communicable Disease Division
Hawaii State Department of Health
PO Box 3378
Honolulu, Hawaii 96801
*** David Borgeson MS
Epidemiology
California Department of Health Services
Environmental Epidemiology and Toxicology Branch
5900 Hollis Street, Suite E
Emeryville, California 94608

Table 1

| Cause of death | ICD 9 Code | Observed (n=205) % | Expected % | Risk Ratio | 95% CI | |
|---|---|---|---|---|---|---|
| Total | | | | | | |
| All infective and parasitic diseases | 001-139 | 0.00 | 1.34 | * | 0.03 | 1.71 |
| All malignant neoplasms | 140-209 | 28.29 | 23.70 | 1.19 | 0.96 | 1.49 |
| Digestive system | 150-159 | 8.78 | 8.71 | 1.01 | 0.65 | 1.57 |
| Stomach | 151 | 1.95 | 2.47 | 0.79 | 0.30 | 2.09 |
| Colon | 153 | 2.44 | 2.21 | 0.91 | 0.37 | 2.20 |
| Respiratory system | 160-163 | 8.78 | 6.85 | 1.28 | 0.82 | 2.00 |
| Genito-urinary system | 179-189 | 5.37 | 2.35 | 2.28 | 1.28 | 4.06 |
| Prostate | 185 | 4.39 | 1.68 | 2.61 | 1.38 | 4.97 |
| Brain and other CNS | 191-192 | 1.46 | 0.39 | 3.78 | 1.22 | 11.71 |
| Lymphatic system | 200-209 | 1.95 | 2.06 | 0.95 | 0.36 | 2.50 |
| Allergic, endocrine, & nutritional diseases | 240-279 | 0.00 | 2.75 | * | 0.00 | 2.84 |
| All diseases of nervous system | 320-389 | 0.98 | 1.17 | 0.83 | 0.21 | 3.31 |
| All diseases of the circulatory system | 390-459 | 52.20 | 45.15 | 1.16 | 1.10 | 1.32 |
| Arteriosclerotic heart disease | 410-414 | 29.76 | 27.24 | 1.09 | 0.89 | 1.35 |
| All CNS vascular lesions | 430-438 | 6.83 | 7.67 | 1.13 | 0.66 | 1.95 |
| All respiratory diseases | 460-519 | 2.93 | 7.92 | 0.37 | 0.17 | 0.81 |
| All diseases of the digestive system | 520-579 | 4.88 | 3.87 | 1.26 | 0.69 | 2.31 |
| Cirrhosis of the Liver | 571 | 4.39 | 1.91 | 2.30 | 1.21 | 4.37 |
| All diseases of the genitourinary system | 580-629 | 1.95 | 1.48 | 1.31 | 0.50 | 3.48 |
| All external causes | 800-998 | 6.83 | 10.11 | 0.68 | 0.41 | 1.12 |
| All accidents | 800-949 | 4.39 | 5.72 | 0.77 | 0.41 | 1.46 |
| Suicide | 950-959 | 0.00 | 2.44 | * | 0.00 | 3.20 |

Confidence intervals are calculated using Taylor series' approximation.
* = Risk ratio is indeterminate; in these cases, the CIs are estimated by Cornfield's method.

an elevated risk ratio of 3 . 78 (95% CI = 1.22 - 11.71). Overall cancer mortality was no different from that in the general population.

In both Caucasians and Hawaiians, the mortality increase in cardiovascular disease and hepatic cirrhosis, and the decrease in respiratory mortality seen in Table 1 in the group as a whole was reflected in the ethnic-specific analysis (Tables 2 and 3). However, because of the decreased sample sizes, only the risk ratio for mortality from cirrhosis of the liver in Hawaiians was statistically significant (RR = 2.99, 95% CI = 1.12 - 7.96). The risk ratio for brain cancer was significantly elevated only in Caucasians (RR = 4.15, 95% CI = 1.04 - 16.51). Although the Hawaiian cohort also had an increased risk ratio, it was based on only one observed death; this led to a very wide confidence interval (RR = 3.60, 95% CI = 0.49 - 26.46).

Selected cause-specific mortality based on the number of years employed as a fire fighter demonstrated no significant variation from the mortality in the general population.

## Discussion

Our study presents several interesting findings. Mortality from respiratory disease was significantly lower in the fireman population as compared to that in the general population. Although this finding is consistent with data from the Ontario and Buffalo cohort studies[8,9], it is perhaps surprising in view of the increased likelihood of exposure to smoke and dust inhaled by firemen. One possible explanation for this finding might be an under-reporting of respiratory disease on death certificates (proposed by Musk and Mitchell[10,11]). Other possibilities include: 1) A general trend toward job transfers, to positions away from respiratory hazards for those fire fighters who were developing respiratory complaints; 2) the "healthy worker" factor[12-14].

As discussed below, the borderline risk ratio elevation for cardiovascular mortality was probably an aberration. The incidence of cirrhosis of the liver was elevated in both ethnic groups, but was statistically significant only in the Hawaiians. Compared with other ethnic groups in Hawaii, these two groups appear to be heavier consumers of alcohol[15], and this may be a cause.

The overall mortality from neoplasms was comparable to that in the general population; however there were statistically significant results in several cancer subgroups. Brain cancer deaths were significantly elevated in Caucasians, although not in Hawaiians. An excess of brain cancer mortality among fire fighters has also been found in several other studies. The Buffalo[9], Los Angeles[16], and the combined Oregon/Washington cohort study[17], all reported significant increases in brain cancer deaths. Milham's Washington State survey also showed an elevated PMR of brain cancer[18]. Thus, the findings in our study of this cancer are consistent with those in previous reports.

Prostate cancer was significantly elevated in both Hawaiians and Caucasians. An excess of prostate cancer was also found in the Los Angeles cohort study[16]. The results of other

*(Continued)* ▶

Table 2

| Caucasian<br>Cause of death | ICD 9 Code | Observed (n=72) % | Expected % | Risk Ratio | 95% CI | |
|---|---|---|---|---|---|---|
| All infective and parasitic diseases | 001-139 | 0.00 | 1.17 | * | | |
| All malignant neoplasms | 140-209 | 26.39 | 23.83 | 1.11 | 0.75 | 1.63 |
| Digestive system | 150-159 | 4.17 | 5.93 | 0.70 | 0.23 | 2.13 |
| Stomach | 151 | 1.39 | 1.19 | 1.17 | 0.17 | 8.20 |
| Colon | 153 | 1.39 | 1.95 | 0.71 | 0.10 | 5.02 |
| Respiratory system | 160-163 | 8.33 | 7.62 | 1.09 | 0.51 | 2.36 |
| Genito-urinary system | 179-189 | 9.72 | 3.22 | 3.02 | 1.49 | 6.15 |
| Prostate | 185 | 8.33 | 2.25 | 3.70 | 1.71 | 8.02 |
| Brain and other CNS | 191-192 | 2.78 | 0.67 | 4.15 | 1.04 | 16.51 |
| Lymphatic system | 200-209 | 1.39 | 2.11 | 0.66 | 0.09 | 4.63 |
| Allergic, endocrine, & nutritional diseases | 240-279 | 0.00 | 1.98 | * | | |
| All diseases of nervous system | 320-389 | 2.78 | 1.28 | 2.18 | 0.55 | 1.86 |
| All diseases of the circulatory system | 390-459 | 48.61 | 42.19 | 1.15 | 0.91 | 1.46 |
| Arteriosclerotic heart disease | 410-414 | 33.33 | 26.84 | 1.24 | 0.90 | 1.72 |
| All CNS vascular lesions | 430-438 | 6.94 | 5.25 | 1.32 | 0.57 | 3.09 |
| All respiratory diseases | 460-519 | 4.17 | 7.02 | 0.59 | 0.20 | 1.80 |
| All diseases of the digestive system | 520-579 | 6.94 | 4.83 | 1.44 | 0.62 | 3.36 |
| Cirrhosis of the Liver | 571 | 5.56 | 2.87 | 1.94 | 0.74 | 5.05 |
| All diseases of the genitourinary system | 580-629 | 0.00 | 0.98 | * | | |
| All external causes | 800-998 | 6.94 | 13.77 | 0.50 | 0.22 | 1.18 |
| All accidents | 800-949 | 4.17 | 7.45 | 0.56 | 0.18 | 1.70 |
| Suicide | 950-959 | 0.00 | 3.23 | * | | |

Confidence intervals are calculated using Taylor series' approximation.
* = Risk ratio is indeterminate.

studies have not shown this increased mortality due to prostate cancer.

There were no suicide cases among fire fighters in our study; other studies have shown low suicide rates as well. Because of their daily responsibility for saving lives, fire fighters may have higher self-esteem, greater job satisfaction, and good social support networks that together foster improved psychological coping mechanisms during times of increased stress or emotional depression. Perhaps because of the small size of the study population, we can offer no plausible explanation for the paucity of deaths in the allergic, endocrine and nutritional disease category.

Risk by trend analysis according to length of employment was considered. However, it was not possible to determine the significance of age and length of employment on mortality, given the small number in the fireman population, and because comparable data was not available in the general population. We looked at a comparison between age adjusted employment of less than 20 years, 20 to 27 years, and 28+ years, but found no significant differences. If, however, exposure-related disease occurred within the first 20 years of employment, then a significant difference in comparison with the other categories (ie, 20 to 27 years and 28+ years) might not have been detected.

Our study has a number of limitations. First, biases may occur from the use of death certificates as a source of data[19]. The cause of death may roughly lead to a misclassification and, therefore, may not be reflected in the correct number of cause-specific deaths. This might occur, for example, when a person dying from a myocardial infarction is not recognized as having terminal cancer as the underlying cause of death.

Second, PMR studies, in general, tend to overestimate some cause-specific deaths while at the same time underestimating others. This is because cause-specific PMRs must add up to 100; high PMRs in some categories will result in low PMRs in other areas. The marginal increase seen in total cardiovascular mortality for example, may be reflective of low risk ratios in other categories.

Third, it should be noted that the vast majority of fire fighters in our study are either of Caucasian or Hawaiian descent; this predominant ethnic make-up is not reflective of the general population here in Hawaii. Therefore, total mortality rates must be judged with this in mind. However, because of the consistency in the findings in both Caucasians and Hawaiians, the findings overall were comparable. This indeed may not be reflected in other ethnic groups.

Finally, risk of disease in any occupational group may be influenced in part by the characteristics of the individuals who select that profession, the so-called healthy-worker effect. This potential bias could be minimized in future studies by comparing mortality data in a more closely related group, such as city policemen.

## Conclusion

An attempt has been made in our study to point out possible risk of death associated with fire fighting caused by exposure to known toxic chemicals and carcinogens present in incendiary smoke. We hope that this PMR study will lead to

Table 3

| Hawaiian Cause of death | ICD 9 Code | Observed (n=101) % | Expected % | Risk Ratio | 95% CI | |
|---|---|---|---|---|---|---|
| All infective and parasitic diseases | 001-139 | 0.00 | 1.49 | * | | |
| All malignant neoplasms | 140-209 | 28.71 | 23.40 | 1.23 | 0.90 | 1.67 |
| Digestive system | 150-159 | 8.91 | 7.60 | 1.17 | 0.63 | 2.20 |
| Stomach | 151 | 1.98 | 2.61 | 0.76 | 0.19 | 3.01 |
| Colon | 153 | 0.00 | 1.29 | * | | |
| Respiratory system | 160-163 | 8.91 | 9.32 | 0.96 | 0.51 | 1.79 |
| Genito-urinary system | 179-189 | 3.96 | 1.13 | 3.52 | 1.32 | 9.36 |
| Prostate | 185 | 2.97 | 0.89 | 3.35 | 1.07 | 10.45 |
| Brain and other CNS | 191-192 | 0.99 | 0.27 | 3.60 | 0.49 | 26.46 |
| Lymphatic system | 200-209 | 1.98 | 2.05 | 0.97 | 0.24 | 3.84 |
| Allergic, endocrine, & nutritional diseases | 240-279 | 0.00 | 4.11 | * | | |
| All diseases of nervous system | 320-389 | 0.00 | 1.01 | * | | |
| All diseases of the circulatory system | 390-459 | 52.48 | 45.40 | 1.16 | 0.96 | 1.39 |
| Arteriosclerotic heart disease | 410-414 | 27.72 | 28.81 | 0.96 | 0.70 | 1.32 |
| All CNS vascular lesions | 430-438 | 2.97 | 5.56 | 0.53 | 0.18 | 1.63 |
| All respiratory diseases | 460-519 | 2.97 | 5.41 | 0.55 | 0.18 | 1.68 |
| All diseases of the digestive system | 520-579 | 3.96 | 3.32 | 1.19 | 0.45 | 3.14 |
| Cirrhosis of the Liver | .571 | 3.96 | 1.32 | 2.99 | 1.12 | 7.96 |
| All diseases of the genitourinary system | 580-629 | 2.97 | 1.22 | 2.43 | 0.78 | 7.52 |
| All external causes | 800-998 | 7.92 | 12.32 | 0.64 | 0.33 | 1.25 |
| All accidents | 800-949 | 4.95 | 7.13 | 0.69 | 0.29 | 1.64 |
| Suicide | 950-959 | 0.00 | 2.31 | * | | |

Confidence intervals are calculated using Taylor series' approximation.
* = Risk ratio is indeterminate.

further investigation based on more detailed information.


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# Occupational-health training at the University of Hawaii

Arthur M. Kodama, PhD*
Harlan H. Hashimoto, DEnv**
Julius Morris, PhD***

*Occupational-health training at the University of Hawaii School of Public Health (UH-SPH) is a graduate-level program focusing on industrial hygiene; it also offers courses of interest to other health professionals, particularly physicians and nurses. The current training at the UH-SPH is designed primarily to prepare occupational-health practitioners at the master's degree level. The occupational-health program elective is considered to be an area of emphasis within a broader program of study in public health. The program offers special opportunities for occupational-health training and research in cross-cultural and international settings. Post-graduate and continuing-education occupational-health training in the community is also discussed.*

Occupational-health training at the University of Hawaii has its primary locus at the School of Public Health on the Manoa campus. There is no baccalaureate degree program in occupational-health at the University, but an Associate of Arts degree in Occupational Safety and Health may be obtained from the Honolulu Community College in the University of Hawaii system.

Occupational-health training is a graduate level program. The program enrolls many physicians and nurses interested in public health who have clearly defined goals in pursuing occupational medicine or occupational-health nursing careers. Although the UH-SPH does not offer formal degrees in either specialization, the occupational-health program is often used as a vehicle to fulfill certain of the certification requirements in those respective fields. For example, some of our students are Preventive Medicine Residency physicians doing their Master of Public Health (MPH) year (PGY-2) with an emphasis on occupational health. Subsequent completion of their practicum year (PGY-3) and enrollment in short-courses in clinical occupational medicine qualify them to sit for the general preventive medicine and occupational medicine boards. Similarly, a MPH degree in occupational-health facilitates certification in occupational-health nursing.

The current training at the UH-SPH is designed primarily to prepare occupational-health practitioners at the master's degree level. The occupational-health program elective includes training in environmental health as well, and is considered to be an area of emphasis within a broader program of study in public health. The intention is to prepare practitioners to have fundamental knowledge and skills in occupational health, but to also have the capacity to deal with environmental health problems and the broader issues of public health. At the master's level, training at the UH-SPH leads to either the MPH degree or the Master of Science (MS). Training requires between 1 and 2 academic years with the intervening summer devoted either to fieldwork (for MPH) or research (for MS). Minimum requirements for a degree include 30 semester hours of course work, although a typical work load is closer to 36 semester hours.

All students in the UH-SPH are required to take certain foundation (core) courses. The balance of a student's program of study is individualized according to interests and needs and is filled-in from a fairly large course-selection menu (see Table 1).

In addition to the master's level programs, the UH-SPH also has a relatively new, school-wide, Doctor of Public Health (DrPH) program. Several recent graduates of that program have earned their doctoral degrees with an emphasis in occupational-health.

The core faculty primarily responsible for the occupational-health training program at the UH-SPH is relatively small. However, in order to provide the broadly based curriculum shown in Table 1, the total number in the faculty who contribute to the program is large. In addition, the program also depends heavily on a group of clinical and adjunct faculty from other units of the University, as well as members of the community who contribute to the instruction and field supervision of our students. These "volunteer" faculty members

* University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822
** University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822
*** University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822

Address correspondence to:
Dr. Arthur M. Kodama
University of Hawaii
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822

Table 1: Course selections in the MPH curriculum with an emphasis on occupational health.

| | |
|---|---|
| **Foundation (Core) Courses:** | |
| PH 623 | Social Science and Public Health |
| PH 642 | Health and Human Development |
| PH 654 | Public Health Statistics |
| PH 663 | Principles of Epidemiology |
| PH 788 | Seminar in Environmental Health |
| PH 791 | Advanced Public Health Practice (Fieldwork) |
| **Occupational-Health Courses:** | |
| PH 683 | Occupational Health |
| PH 684 | Principles of Industrial Hygiene |
| PH 687 | Environmental Toxicology |
| PH 691 | Occupational Safety |
| PH 692 | Industrial Hygiene Engineering |
| PH 695 | Ergonomics |
| PH 699 | Directed Readings in Occupational Health |
| PH 700 | Environmental Epidemiology |
| PH 773 | Measurement of Environmental Factors (Lab) |
| PH 797 | Seminar in Occupational Medicine |
| **Other Recommended Courses:** | |
| PH 658 | Computer Applications in Public Health |
| PH 664 | Advanced Epidemiology |
| PH 665 | Epidemiology of Chronic Diseases |
| PH 688 | Environmental Health in Developing Countries |
| PH 693 | Risk Assessment |
| PH 694 | Hazardous Materials Management |
| PH 792 | Injury Epidemiology |

provide "real world" expertise and add great strength to the program.

A distinctive feature of occupational-health training at the University of Hawaii is the central role played by the UH-SPH in the Asia-Pacific Academic Consortium for Public Health. The Consortium is comprised of schools and faculties of public health from Thailand, Indonesia, Taiwan, the Philippines, Malaysia, Bangladesh, Singapore, Nepal, the Socialist Republic of Viet Nam, the People's Republic of China, Sri Lanka, Korea and Japan. The mission of the Consortium includes the collaboration among the academic institutions of public health in Asia and the Pacific Basin in training and research. An occupational-health student interested in international and cross-cultural aspects of occupational-health may utilize consortium linkages to arrange for special training and research opportunities.

Since 1978, the UH-SPH has had an Occupational-health Training Grant from the National Institute for Occupational Safety and Health (NIOSH). During this period, the School has graduated 70 to 75 students with an emphasis in occupational health. Approximately 53% of the graduates have taken positions in Hawaii, 34% on the mainland U.S. and the remainder have returned to their home countries in the Asia-Pacific region.

International[1], national[2] and Hawaii/Pacific Basin[3] surveys all indicate an urgent need for more training and manpower development in occupational-health. Furthermore, continuing-education needs are evident everywhere for the benefit of practitioners already in the field. For example, the Bureau of Health Professions of the U.S. Public Health Service in a 1988 study[2] reported that of the currently practicing occupational-medicine physicians and occupational-health nurses, the majority needed additional training.

Although the Occupational-Health Training Program at the UH-SPH is primarily a formal, graduate level, academic degree program, we also recognize a programmatic and institutional obligation to provide continuing education and to do a certain amount of outreach to the community as well as to other units within the university.

Workshops and seminars have been presented within the community, and some of our regular occupational-health courses are offered in the late afternoon and evening hours in order to enable full-time workers to continue their education.

Within the University, an attempt is being made to encourage the incorporation of occupational-health and safety into the curricula of the College of Business Administration and the College of Engineering, since it is the business managers who can make the decisions, and the engineers who can design the workplaces of tomorrow with appropriate considerations on behalf of health and safety.

Much more needs to be done in the way of outreach. The School continues to seek additional resources to enlarge on this effort.

A variety of continuing-education opportunities and special training courses related to occupational-health are available to health professionals in the community from other sources. Local chapters of organizations such as the American Industrial Hygiene Association, American Society of Safety Engineers, Occupational-health Nurses, etc., as well as State and federal departments present, sponsor, or import training programs in specific health and safety subject areas. Topics in Occupational medicine are increasingly a part of regular educational staff meetings and grand rounds in local hospitals. Organizations such as Chart Rehabilitation of Hawaii, Inc. offer public workshops on occupation-related injuries and disorders.

An exciting new development in physician training is a program being developed by the Hawaii State Department of Health (DoH) as part of an anticipated new law requiring all physicians to report selected occupational illnesses and injuries. The DoH will be mailing informational materials periodically to all physicians in the State to call attention to occupational-health problems. The Hawaii Medical Association has recently organized a Speakers Bureau, including some occupational-medicine specialists, who will present lectures and workshops on the diagnosis and treatment of occupational diseases.

The growing importance of occupational-health is underscored by the health objectives stemming from the U.S. Public Health Service reports, "Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention,"[4] and "Promoting Health/Preventing Disease: Objectives for the Nation."[5]. Of the 226 objectives delineated to fulfill the purposes of the reports by 1990, 20 were in the area of occupational health.

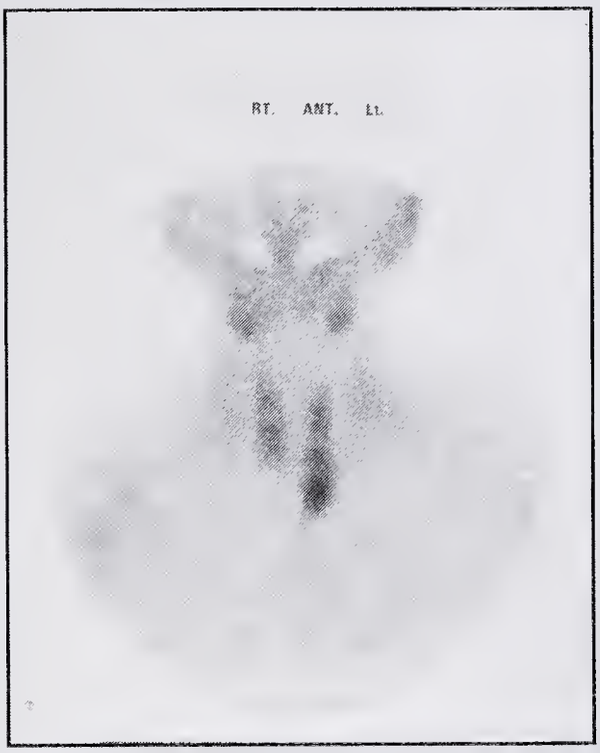
The 1985 Governor's Conference on Health Promotion and Disease Prevention[6] adopted nearly identical objectives for the

*(Continued on page 99)* ▶

# Nuclear Medicine Teaching File

## PARATHYROID IMAGING

**History:** The patient is a 65-year old Japanese female admitted with hypercalcemia. Calcium level was elevated at 15.2 mg/dl (nl 8.8 - 10.4) and PTH (intact) was measured at 424 pg/ml (nl 10 - 65). The patient was referred for a thallium-technetium parathyroid scan preoperatively.




**Scan Findings:** The thallium scan shows a large area of abnormal thallium activity below the left lobe of the thyroid gland, not seen on the technetium pertechnetate thyroid scan. The scan findings are consistent with a large parathyroid adenoma in this area. Incidentally, ultrasound revealed no definite parathyroid tumor.




**Surgical Findings:** A 7.2 gram left inferior parathyroid adenoma was found consistent with the scan findings.

*Nuclear Medicine — Non-invasive, physiologic imaging*

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# Lead poisoning in Hawaii: 1990

Robert A. Wiebe, MD*
Bruce S. Anderson, PhD, MPH**
Carl W. Lehman, MD†
Denis J. Fu, MD††

*Although lead (Pb) is one of the oldest known and most thoroughly described toxins, it continues to be a significant health hazard in 1990. There has been much progress in defining the nature and extent of low-level lead toxicity during the past decade. There continues to be insidious sources of lead toxicity in our environment, in water, food, paint and contaminated soil. As the epidemiology of lead poisoning is more clearly defined, toxicities are recognized as the result of lower and lower levels of exposure. Recognition of low-level lead exposure and the primary prevention of its effects on health requires a keen awareness of high-risk environments as well as the subtle symptoms and signs of lead poisoning. A high index of suspicion by primary care physicians plus government support are necessary to implement successful prevention programs.*

## Historical perspectives

Lead is probably the oldest neurotoxin known to man. It has been obtained and used by man since the earliest recorded times[1]. The uses for lead throughout the ages have been as variable as the mind can imagine. As a medication it has been used for everything from contraception to management of epilepsy[2]. Latin American and Southeast Asian cultures, even today, ingest lead oxide as a remedy for fever, rash, and digestive complaints[3]. The ancient Roman practice of sweetening poor vintage wines with lead-containing mixtures has been in vogue as late as the 18th century in the United States. The use of lead-containing substances as additives in paints, cosmetics, and ceramic glazes have also been well recognized as a cause of toxicity throughout the ages.

The toxic effects of lead were known most likely to both the Greeks and Romans. Hippocrates described a severe attack of abdominal pain (presumably "lead colic") in a man who was extracting metals. Nicander, in the second century BC, noted an association between exposure to lead and pallor, constipation, colic, and paralysis. Pliny (AD 79) served warning to the Romans of the danger of inhaling fumes produced by the smelting of lead. In 1763, Benjamin Franklin warned of lead toxicity from drinking rum distilled in lead-condensing coils, causing colic and wrist drop. Sir George Baker in 1767, traced the disease described as "Devonshire colic" to cider prepared in lead presses. In 1839, Tanquerel des Planche published a famous study of 1200 cases of lead poisoning[4].

The use of lead in industry has been a cause of environmental pollution in every industrialized nation. Analysis of sequential layers of ice in Greenland have documented a twenty-fold increase in lead pollution over the past 200 years[5]. The current world production of lead is approximately 2.5-million tons per year with 40% of it consumed annually by industries in the United States.

## Lead in Hawaii

Surveillance of Hawaii's children for potential lead toxicity has been attempted on several occasions over the past 20 years. In 1972, blood samples were taken from 156 Head Start children in Honolulu for determination of free erythrocyte protoporphyrin (FEP). The results showed no evidence of toxicity; however, there was a question as to the reliability of the laboratory performing the tests[6].

In 1973, blood lead-levels were performed on 76 children from Kalihi valley as a part of a comparative study featuring Honolulu, Hawaii, and Newark, New Jersey[7]. The mean blood lead-level in this series of Honolulu children was 17 µg/dl with a range of 10 to 30 µg/dl; 90% of the children tested had blood lead-levels less than 20 µg/dl. Seventy-six age- and sex-matched preschool children from Newark were compared to the Honolulu cohort and found to have a mean blood lead-level of 28 µg/dl with a range of 11 to 60 µg/dl; 26% of children tested had levels above 30 µg/dl. Based on this study, it was assumed that Honolulu was relatively free of childhood lead-poisoning when compared with the older, more polluted city of Newark.

In 1974, the State of Hawaii Department of Health (DoH), Maternal and Child Health Branch, performed a pilot survey to determine the need for more widespread screening for lead-poisoning in Hawaii. One hundred and ninety-eight children under 6-years of age were selected from a variety of urban and rural areas on Oahu. Children were chosen for screening that

*(Continued)* ▶

* Pediatrics
1319 Punahou Street, Honolulu, Hawaii 96826

** State Department of Health
Deputy Director, Environmental Health

† Pediatrics
615 Piikoi Street, Honolulu, Hawaii 96814

†† Pediatrics
2180 Main Street, Wailuku, Maui 96793

Reprint Requests:
Robert A. Wiebe, MD
1319 Punahou Street, Honolulu, Hawaii 96826

had lived most or all of their lives in older housing. Three separate local and Mainland laboratories were utilized in order to check on lab variations. Results showed that 2 children with lead levels of 40 to 44 µg/dl, and 11 children with levels of 30 to 39 µg/dl. This pilot screening project again validated the impression that Hawaii had no major lead toxicity problem, although it was recommended that an increased awareness of the possibility of lead-intoxication in children in high-risk areas be posted.

In 1986, DoH investigators screened children at 10 preschools in Honolulu for excessive exposure to lead in order to determine the extent to which children attending preschools near major roadways in Honolulu might have been exposed to lead in the soil, the result of deposition from automobile exhaust emissions (Unpublished data). The schools selected were on the basis of the level of lead in the soil. The children's medical records at major medical centers in Honolulu were scrutinized.

Altogether, 341 (43.3%) of the 788 children enrolled at these schools were screened for evidence of undue exposure to lead; of these, 7.9% had FEP levels of ≥ 35 µg/dl and required follow-up blood lead testing. None of these children were unduly exposed to lead; that is, blood lead levels were below 25 µg/dl. Soil lead levels at the schools sampled ranged from an average of 32 parts per million (ppm) to 461 ppm, comparable to levels found in other urban centers in the United States.

These results are consistent with previous studies of a preschool located immediately adjacent to, and normally downwind of, an H-1 freeway viaduct in Manoa where, in June, 1983, 21 (52.5%) of the 40 children enrolled at the school were screened for evidence of excessive lead exposure by FEP measurements. Seven (33%) of the 21 children examined had FEP levels > 35 µg/dl. Follow-up blood lead screening indicated none were unduly exposed to lead. On December 18, 1984, 25 (52.5%) of the children enrolled at the school were re-examined; only 2 (8%) of the 25 children examined had FEP levels of ≥ 35 µg/dl; even so, both had blood lead-levels < 50 µg/dl.

These studies indicate that the prevalence of unacceptable lead exposure in children in Honolulu is well below the national average. Recent data suggest that about 6 to 7% of children tested in cities by blood-lead, screening programs met the criteria for excessive absorptions of lead (NAS, 1980). Indeed, the low incidence of lead-poisoning in Honolulu is surprising, considering that lead-based paints have been used extensively in Hawaii, and that soil lead-levels were similar to that in cities in the mainland United States, where automobile emissions contribute significantly to soil lead levels (Quarles, et al., 1974; EPA, 1977; Mielke, 1983).

In 1987, an unusual problem was identified in the South Kona area of the Island of Hawaii, where emissions of sulfur dioxide from the Kilauea Volcano Rift Zone had created an "acid-rain condition". Although the acid water per se did not pose a significant health risk, it had the potential to leach lead and other metals out of plumbing systems. This problem was brought to the attention of public health officials because of complaints of "blond hair turning green" from the copper in household plumbing systems.

Initial sampling of catchment water from 5 homes in South Kona found pH levels ranging from 4.08 to 6.25; 2 homes had lead in catchment water above the current Maximum Contaminant Level (MCL) of 50 parts per billion (ppb). In July 1988, DoH investigators systematically sampled 75 systems representative of all regions of the Island of Hawaii for lead and pH. While investigators found only a minor correlation between lead levels in water and pH, 28 percent (21/75) of the systems sampled had lead-levels above the proposed EPA standard for lead in public water systems, which is 20 ppb.

To ensure that the public was not being unduly exposed to lead-containing catchment drinking water, the DoH offered all residents who used catchment water for drinking, to have blood tests as well as their water tested for lead. Approximately 3,000 people were screened for lead exposure using the zinc erythrocyte protoporphyrin (ZPP) method; about 5% had elevated ZPP levels. None of those with elevated ZPP levels was found to be unduly exposed to lead from drinking lead-contaminated water (ZPP can be elevated as a result of other disorders, such as iron deficiency). In addition, over 2,000 water samples were analyzed; lead concentrations ranged from less than detectable limits (20 ppb) to levels as high as 7000 ppb. Preliminary results showed a correlation between water-catchment lead content and blood lead-levels (unpublished results).

Follow-up investigations have found that lead-based paint used in roofing and as a sealant for water tanks, lead flashing, lead-headed nails, and lead solder used in gutters and piping could have contributed to high lead-levels in catchment water systems. Since samples from catchment systems thought to be free of leaded materials as well as the systems with leaded materials in areas that did not have acidic rainwater both showed traces of lead, the DoH has recommended that homeowners replace leaded materials in their home catchment systems and test all catchment water before using it for drinking or cooking.

To determine the incidence of recognized lead poisoning, medical records at the major medical centers in Honolulu were reviewed for the 16-year period 1970 through 1985. Only two cases of lead poisoning among children were identified; both very likely were exposed to lead-based paint. One case was a 4-year-old boy living in Waianae. He was admitted to the hospital for workup of nocturia and flank pain. Blood lead-levels of 39 µg/dl were noted in his record. Parents of the child had indicated he ate paint at his home. The second case was a 4-year-old boy living in Honolulu who was admitted for anemia. Blood tests revealed blood lead levels of 77 µg/dl and urine lead levels of 79 µg/dl. This child was known to have chewed on a stairway railing. Testing paint for lead in both instances was not possible.

The only other case of lead-poisoning found in the medical records review was that of a 54-year-old woman living in Honolulu who was hospitalized for anemia, abdominal pain, and vague neurological complaints. The source of lead was not determined in her case. Her dietary history included the consumption of a large amount of Chinese herbs which may have been prepared using lead utensils, but the testing of the

herbs and various utensils for lead apparently was not done.

The results of these studies support the conclusion that children in Honolulu are not at elevated risk for lead exposure. However, one must be cautious in extrapolating these results to rural areas where one might expect older housing with deteriorating lead-based paint and, possibly, other sources of lead.

**The sources of lead**

Tables I to III include a partial list of potential sources of lead which may be helpful to the primary-care physician seeking a history of lead exposure from his patient. Since Hawaii is free of major industrial sources of lead, household and home environment exposures to lead are more likely to be the source for lead poisoning in children. Paint used in homes built prior to 1950 often contained large amounts of lead carbonate. Old, peeling, lead-based paint, or dust from demolition of old buildings, provide a tasty sweet treat for the toddler exploring the environment. Home renovation projects are still a source of lead poisoning[8]. Paint chips, fumes, or dust, as houses in inner city areas are renovated, provide a major source of childhood lead-poisoning. Since 1977, household paint is not allowed to contain more than 0.06% lead by dry weight.

TABLE I

SOURCES OF EXPOSURE TO LEAD IN HOUSEHOLD

| |
|---|
| Lead-based paint |
| Lead-glazed pottery |
| Antique pewter cookery |
| Lead toys, shot, bullets |
| Fishing weights |
| Foil on wine bottles |
| Hair dyes, cosmetics |
| Food, drinking water |
| Contaminated illicit drugs |
| Bone meal calcium supplements |
| Lead plumbing |
| Folk remedies |

TABLE II

SOURCES OF EXPOSURE TO LEAD OUTSIDE THE HOME

| |
|---|
| Dust, soil contamination |
| Burning batteries |
| Burning old painted wood |
| Lead gasoline, road dust |
| Old home renovation |
| Lead dust from work on clothes |

TABLE III

SOURCES OF EXPOSURE TO LEAD INDUSTRIAL - WORKPLACE

| |
|---|
| Renovation, construction |
| Radiator, auto repair |
| Smelting operations |
| Soldering, welding |
| Battery manufacture |
| Painting, demolition |
| Firing ranges (indoor) |

Contamination of water continues to be a problem in 1990[9,10]. Lead is leached from solder around joints of copper pipes, and in very old buildings from lead plumbing. Acid or hot water can increase the solubility of lead. Corrosion of lead pipes is often reduced over time due to the gradual deposition of phosphates that provide a protective film. The U.S. EPA in 1974 set a level of 50 µg per liter as the Maximum Contamination Level (MCL) allowable in public water systems. This is currently being considered for a reduction to 20 µg per liter.

The combustion of leaded gasoline has been the major source of lead in the air in urban communities since its introduction in 1925. It is estimated that over 90% of the air burden of lead is from this source[11]. Lead released into the air near roadways may settle onto soils and ducts. The association between high traffic density and high lead-levels in infants has been demonstrated[12]. The flow of dispersal of gasoline-based lead from combustion, to air, to food, to soil and into man has been shown[13]. The introduction of lead-free gasoline has contributed to a considerable decrease in the overall burden of lead in the air, and a reduction in mean blood lead-levels over the past 15 years[14].

Soil and dust are of particular concern in terms of possible sources of lead because of the tendency for children in the 2- to 3-year-old age group to put their hands, and other objects that may be contaminated with lead-containing dust, into their mouths. The contribution to the total lead intake in children by the ingestion of food and soil or dust is estimated to be approximately 67% and 20%, respectively (NAS, 1980). However, children have a greater risk of exposure to lead from sources other than air, food, or water, ie normal mouthing activity or abnormal ingestion of non-food items (pica).

Exposure to lead in the industrial workplace is the main source of toxicity in the case of adults. There is a list of 120 occupations that may be associated with a risk of undue exposure to lead[15]. In 1989 alone, the literature has documented lead poisoning in bridge-demolition workers[16], paint removal workers[17], battery-repair-shop workers[18], automobile radiator mechanics[19] and construction workers[20]. Workers in high-risk occupations have been shown to bring lead dust home to their families on contaminated clothing[21]. This means the physician has a responsibility to recognize the lead-exposed worker and to understand workplace standards for lead levels established by the federal Occupational Safety and Health Administration (OSHA)[22].

Recent concern over contamination of drinking water in South Kona caused environmental health officials to inspect homes where high levels of lead were found in rain catchment water. In addition to contamination by lead of the water catchment systems, inspectors found a variety of other sources of lead in areas where children could be potentially exposed.

*(Continued)* ▶

These included: Peeling, old, lead-based paint, old car batteries that were contaminating soil in the yards, lead fishing weights, leaded gasoline, lead shot, lead-lined art work, and lead cooking utensils. Fishing weights are often manufactured in the home, and if ventilation is inadequate, may be a source of exposure.

### Pharmacokinetics of lead

> Lead is not known to have any useful biological purpose in the body. Its only value might be considered as a "marker" of environmental pollution. Ideally, a normal serum lead level should be zero.

Lead enters the body primarily through the gastrointestinal tract. An adult absorbs approximately 5% of a lead dose, and small infants and children may absorb as much as 20%. If there is a deficiency of iron, zinc, or calcium, absorption of lead may be increased[24].

The distribution of lead in the body is complex and poorly studied in man. The total body lead burden can be divided into 3 compartments with blood and soft tissue representing a rapidly interchangeable pool, the skeletal system as a storage pool, and skin and muscle as an intermediate pool. Ninety percent of the body burden of lead can be found in bone. It is attracted to the metaphyses of growing bones and can slow linear growth in children, therefore. When it is incorporated into cortical bone, it becomes an inert and insoluble lead phosphate. An equilibrium develops between blood lead and the insoluble bone lead in growing bone[25].

The elimination half-life of lead is difficult to assess due to the movement between compartments. The half-life of lead after a single toxic exposure is 27 to 44 days, whereas bone storage may extend the half-life in chronic exposure to 6 to 7 years[25,26]. The kidney is responsible for approximately 75% of the daily lead loss; feces, skin, and hair provide other routes of excretion.

### Pathophysiology

Lead has a high affinity for negatively charged sulfhydryl groups found in enzyme systems throughout the body. One of the enzyme systems most sensitive to the presence of lead is the mechanism in heme biosynthesis. Disordered porphyrin metabolism and heme biosynthesis are affected at several enzymatic steps. When an enzyme pathway is blocked, there is an increased accumulation on one side of the equation and a decreased formation of the substance on the other side of the equation. When gamma aminolevulinic acid dehydratase and ferrochelatase are inhibited by lead, heme synthesis is reduced and anemia results[27]. However free erythrocyte protophorphyrin (FEP) accumulates on the other side of the equation. This is the basis for testing for lead poisoning.

Divalent lead is similar in many ways to calcium and exerts a competitive action on several systems, such as mitochondrial respiration, as well as on various neurological functions. The similarity between calcium and lead may explain partially why they seem interchangeable in bone; it may also account for the fact that 90% or more of the total body burden of lead is stored in the skeleton.

The effect of lead on mitochondrial structure and function is the main cause of central and peripheral nervous system toxicity. Lead is filtered through the blood-brain barrier more readily in children, causing a swelling and distortion of mitochondriae in the brain, which leads to coma, convulsions and cerebral edema. Peripheral nerves, on the other hand, can undergo segmental demyelination, with decreased motor nerve conduction velocity. Lead also appears to interfere with neurotransmitters. Aminolevulinic acid (ALA), which is produced as a result of action of lead on heme synthesis is chemically similar to the neurotransmitter gamma amino-isobutyric acid (GABA). ALA formed as a result of lead poisoning may bind to GABA sites producing neurotoxicity[28].

Lead affects the kidney adversely primarily in the proximal tubules and loops of Henle. A reversible acute renal failure with a Fanconi-like syndrome (renal tubular acidosis, glycosuria, and aminoaciduria) is seen in acute lead poisoning. Azotemia and hypertension can occur in chronic lead poisoning, as secondary to chronic interstitial changes[29]. Gout may occur as a result of diminished clearance of water, with subsequent hyperuricemia.

### Clinical manifestations

Signs and symptoms of lead poisoning are dependent on the age of the patient, the duration of exposure and the lead level. Physical findings are confined to the hematologic, renal, nervous, gastrointestinal and cardiac systems (Table IV).

There are 2 clinically distinct syndromes associated with lead-poisoning. The acute clinical picture characterized by hepatic injury, hemolysis, and encephalopathy may occur when a large amount of lead is ingested and absorbed. Most lead-poisoning however is chronic, of slow onset, and is the result of the accumulation of lead in the body over time.

It is important to note that serious damage may occur in the absence of any signs or symptoms. Detection of lead-poisoning is best done by screening of the populations known to be at risk, such as children and pregnant women living in urban, pre-1950 housing, or workers in the lead industry. "At-risk" individuals can be recognized only by an alert and aware physician taking a careful work, environmental and medical history. If there is any possibility of exposure in a home, play or work environment, screening tests should be performed.

*Hematologic* signs and symptoms are the result of disordered heme synthesis and a resultant anemia. Significant anemia is a later manifestation of lead-poisoning; the absence of anemia does not rule out toxicity. Lead-related anemia might be normocytic and normochromic, without the presence of concomitant iron-deficiency anemia. Typical childhood lead-poisoning, however, usually results in a microcytic and hypochromic anemia associated with iron deficiency; the latter often potentiates the anemia of lead-poisoning. Basophilic stippling is a result of clumped endoplasmic reticulum[30]. The absence of basophilic stippling, however, does not rule out toxicity.

*Renal symptoms* are related to interstitial nephritis and tubular disturbances. Deposits of lead in the kidneys may produce glycosuria and aminoaciduria.

*Gastrointestinal* symptoms include some of the most common and frequent findings in lead-poisoning. They include nausea, vomiting, colicky abdominal pain, and constipation[31]. During symptoms of "lead colic," the blood pressure may be elevated and the pulse slow. The direct action of lead on smooth muscle has been suggested by some as the origin of colic, whereas others are of the opinion that vagal irritation associated with intestinal ischemia is the underlying mechanism. Hepatic injury occurs only in acute lead-intoxication.

*Central and Peripheral Nervous Systems* are affected by lead. The "wrist drop" or focal palsy is one of the earliest recognized signs of lead-poisoning. Peripheral neuropathy does not always correlate with blood levels or the duration of lead exposure[32]. Although increased lead-levels are known to cause slowing of nerve conduction velocity, it is not a useful test for low-level lead-toxicity[33]. Lead-encephalopathy, manifested by depression of the sensorium, increased intracranial pressure, vomiting, irritability, convulsions and coma, results in serious long-term effects. More subtle CNS findings include irritability, lethargy, fatigue, and headache.

Neurobehavioral affect in low-level exposure to lead has been studied and debated for over a decade. Needleman et al[34] demonstrated that asymptomatic, early, school-aged children with dentin lead-levels > 20 µg% had problems with classroom performance. These children were subsequently shown to have lower IQ scores by the 5th grade, and a higher risk of high school drop-out and absentee rates. A summary meta-analysis of modern studies of low-level, childhood exposure to lead strongly supports the hypothesis that even at low doses lead impairs children's IQ[35]. Children with even low levels of lead in the blood have demonstrated a lower vocabulary capacity, poor eye-hand coordination, prolonged reaction times, and decreased grammatical-reasoning scores. Abnormal blood lead-levels have also been associated with hearing deficits[36]. It is becoming increasingly more evident that exposure to lead during early development (fetus and young child) is a particularly serious health problem in terms of central nervous system development as the target organ for toxicity. Delayed cognition, decreased IQ and hearing impairment can occur at lead-levels previously thought to cause no harm[37]. Cord blood lead-levels have shown that about 80% of the maternal blood lead goes to the developing fetus[38]. Developmental delays have been demonstrated in children born with blood lead-levels > 10 µg%[39].

TABLE IV

SIGNS AND SYMPTOMS OF LEAD-POISONING

| | |
|---|---|
| HEMATOLOGIC | GASTROINTESTINAL |
| Anemia (Microcytic) | Abdominal pain |
| Hemolytic anemia | Constipation |
| Basophilic stippling | Anorexia |
| | Nausea, vomiting |
| | "Metallic" taste |
| RENAL | NEUROLOGICAL |
| Proteinuria, glycosuria | Encephalopathy |
| Aminoaciduria | Developmental delays |
| Interstitial nephritis | Peripheral neuropathy |
| Decreased GFR | Mental deficiency |
| Hypertension | Hearing loss |

**Laboratory assessment and screening**

Because the symptoms of lead-poisoning can be so subtle and insidious in onset, appropriate laboratory screening of high-risk groups becomes very important. An elevated blood lead-level is necessary for the diagnosis of lead-poisoning and also in monitoring subsequent appropriate therapy. However, blood lead-level testing is expensive, easily contaminated and very difficult to control. It is not practical for mass screening.

Analysis of the accumulation products of disordered heme synthesis is a more useful way for mass screening. Erythrocyte protoporphyrin can be easily measured in a wet drop of blood in a hematofluorometer[40]. "Free" erythrocyte protoporphyrin (FEP), zinc protoporphyrin (ZPP), and EP are essentially equivalent measurements; ZPP or FEP in the screening of cohorts of high-risk groups are the most cost-effective tests available. They will test for both lead poisoning and iron deficiency at the same time[37], a value > 35 µg/dl indicates the presence of lead. Significant lead-poisoning will usually be indicated by ZPP levels > 100 µg/dl. In children with normal iron status, however, ZPP may not be a sensitive indicator of blood lead-levels[41], and may be less effective in identifying children with a low lead-burden. The federal Center for Disease Control (CDC) has developed guidelines for interpretation of ZPP results[42]. Table 5 summarizes CDC recommendations, providing a plan for diagnostic and therapeutic decisions based on ZPP and blood lead-levels. There should be a greater urgency for evaluation if the patient is symptomatic, if under 3-years-of-age, or if other family members show evidence of lead-toxicity.

The American Academy of Pediatrics Committee on Environmental and Health Hazards has proposed several specific recommendations for both practitioners and public agencies[37]. The recommendations are based on the fact that exposure to lead is widespread and causes serious and generally irreversible neuropsychological effects at even low exposure levels. Recommendations to private practitioners include more widespread use of the FEP test as a sensitive indicator of subclinical iron-deficiency, as well as screening for lead. Particular emphasis should be directed towards screening children under 3-years-of-age who live in or frequent high-risk environments. The Academy further recommends that pediatricians take responsibility for educating parents of children living in high-risk areas about the hazards of lead and how to prevent exposure to it.

Recommendations to public agencies by the Academy include mandatory reporting of all cases of lead-poisoning to the state health departments, the development of national programs for the screening for hazards in housing, and for the systematic decontamination of houses that still contain lead-based paint. These recommendations by the Academy for an organized effort to study, identify and reduce the hazards of contamination in our environment by lead has resulted in Congressional action and a comprehensive review of the problem this past year[14].

**Therapy**

"Urine provocation testing" is used to determine the need

*(Continued)* ▶

for chelation therapy. An asymptomatic patient who fits into a grade II or III toxicity range (Table V) should have provocative testing with $CaNa_2EDTA$ to demonstrate the amount of mobilizable lead. One dose of 25 mg/kg in 0.5% solution should be given over one hour[43]. Urine is then collected for 8 hours to determine the lead excretion rate. If greater than 0.6 µg of lead is excreted per mg EDTA administered, the test is positive and further chelation therapy is indicated (Table 6). $CaNa_2EDTA$ is a chelating agent that removes lead from the "extracellular" compartment. It draws lead from soft tissue, from the central nervous system and from red blood cells. It is equally effective given i.v. or i.m. in a daily dose of 50-75 mg/kg. Since EDTA will chelate other inherent metals in the body such as zinc, it should not be given for more than 5 days without an interval of 2 days.

In the instance of severe toxicity, dimercaprol (BAL) should be given prior to the use of EDTA. BAL will enter cells and tie up available lead avoiding a rapid increase in serum lead levels secondary to mobilization by EDTA[44]. EDTA-lead complexes can be very nephrotoxic; therefore it is important to maintain good renal output during chelation therapy. Table 6 provides guidelines for chelation therapy based on the clinical state and laboratory values.

TABLE V

ZINC PROTOPHORPHYRIN BY HEMATOFLUOROMETER: RISK CLASSIFICATION OF ASYMPTOMATIC CHILDREN FOR PRIORITY MEDICAL EVALUATION

| BLOOD LEAD ug/dl | ERYTHROCYTE PROTOPORPHYRIN ug/dl | | | |
|---|---|---|---|---|
| | <35 | 35-74 | 75-174 | >175 |
| Not Done | I | * | * | * |
| <24 | I | ↓Fe | ↓Fe | EPP |
| 25-49 | A | II | III | III |
| 50-69 | ? | III | III | IV |
| <70 | ? | ? | IV | IV |

* = Blood test needed to estimate risk
↓Fe = Iron deficiency anemia
A = Early exposure or contamination
? = Combination not generally observed, repeat analysis
EPP = Consider erhythrocytic protoporphyrin
I = Normal
II = Moderate toxicity, limit exposure
III = Severe toxicity, assess early
IV = Urgent Toxicity, hospitalize

(Adapted from CDC Guidelines42)

TABLE VI

THERAPY OF LEAD POISONING

| CLINICAL STATE | THERAPY |
|---|---|
| 1) Blood lead 25-50 ug/dl<br>Urine provocation < 0.6 ug/Pb < 0.6 mg EDTA | 1) -Remove source of lead<br>-Close follow-up |
| 2) Blood lead < 50 ug/dl<br>Urine provocation < 0.6 | 2) -EDTA 50 mg/kg x 5 days<br>-Close follow-up |
| 3) Blood lead 50-69 ug/dl | 3) -Assure urine output<br>-EDTA 50 mg/kg x 5 days<br>-Monitor rebound in 5-7 days<br>-Repeat if necessary |
| 4) Blood lead < 70 ug/dl | 4) -BAL 3 mg/kg q f h x 2 days<br>-then q 4-6 h x 2 days<br>-then q 4-12 h up to 7 days<br>-(discontinue when lead < 50 ug/dl) |
| 5) Lead encephalopathy | 5) -BAL 5 mg/kg/dose as in #4<br>-EDTA 75 mg/kg/day<br>-Continue for 5 days, then rest 2 days and repeat |

(Modified from Piomelli et al45)

### The practicing physician and prevention

In the absence of smelters, foundries, high-risk work environments, the decrease in the use of leaded gasoline, and the relatively small number of pre-1950 housing, Hawaii is a "low-risk" environment for lead-poisoning.

However, exposure to lead is widespread and in unexpected forms in our environment. It is quite clear that even minimum but chronic exposure to lead can result in neuropsychologic effects that are often irreversible. Prevention of exposure to lead is far more worthwhile than the recognition and then treatment of the signs and symptoms once they have occurred.

There are no "safe" levels of lead in the environment. Recent trends in prevention stress the need to reduce exposure to lead to the greatest extent possible. Since only a relatively small fraction of all children can be effectively protected by the identification and removal of hazards, a more effective public health control involving the removal of sources of lead that may contaminate soil, dust, air, water and food, is needed.

Methods are available and have been shown to be effective in reducing exposure to lead. For example, the rigorous practices of hygiene has been found to be effective in reducing the likelihood of elevated blood lead in children (Charney, 1983). Such may include the frequent mopping of floors, tabletops and shelves and other surfaces upon which particles may accumulate as well as frequent washing of hands, especially before meals.

The physician must maintain a keen index of suspicion when high-risk populations and high-risk environments suggest an exposure to lead. Anyone at high risk should be screened for the presence of lead whether or not signs or symptoms exist.

Lead-poisoning must, by law, be reported to the DoH. Through surveillance by the authorities, high-risk populations and high-risk environments can be further identified in Hawaii.

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# Medical consequences of acute exposure to high altitude

Carl P. Hallenborg MD

*People who ascend rapidly to altitudes greater than 3,000 meters (10,000 ft) may become ill; rarely, some may die from an inability to adapt to hypoxia. Age, pre-existing cardiopulmonary or hematologic disease, and the rate and degree of ascent are known to limit man's adaptation to high altitudes. Other factors, such as blunted hypoxic respiratory drive and sublinical disease of the pulmonary vascular bed are probably also important. Pre-exposure with acetozolamide (Diamox) helps, but once symptoms of high altitude pulmonary edema (HAPE) occur, supplemental oxygen and rapid descent to lower altitudes are the only known remedies. In view of the steady increase in the number of people who work and play at high altitudes, physicians must understand the pathophysiologic mechanisms involved in order to treat properly and to counsel patients.*

Exposure to altitudes over 3,000 meters rapidly or suddenly is known to cause many people discomfort, and it can subject a few to life-threatening disease. Although objective data are scarce because of logistical problems, many people complain of lassitude and headache; few will have frank pulmonary congestion and will collapse[1,2]. Now that transportation to high altitudes has improved, and interest in work and play at high altitudes has increased, one may anticipate that more people will be at risk. Mountain-climbing and skiing are popular sports. They frequently take place at altitudes over 3,000 meters. Astronomers frequently work at 5,000 meters and above. Border conflicts resulting in military operations can involve thousands of people at high altitudes. Most of the illnesses and devastating consequences of high altitude exposure are avoidable.

## Physiologic mechanisms

Although our knowledge of the mechanism is incomplete, hypoxia, of all of the physical factors involved, is the most important. As one ascends, barometric pressure and partial pressure of oxygen ($PaO_2$) fall, so that at 3,000 meters only 100 mm torr (torr = 1/760 of 1 atmosphere) of oxygen is available at one's mouth (Fig. 1). Even less is available to the cells of the body because of the oxygen cascade (Fig. 2), the precise $PaO_2$ varies according to individual differences in ventilation, diffusion, and the ventilation-to-perfusion balance.

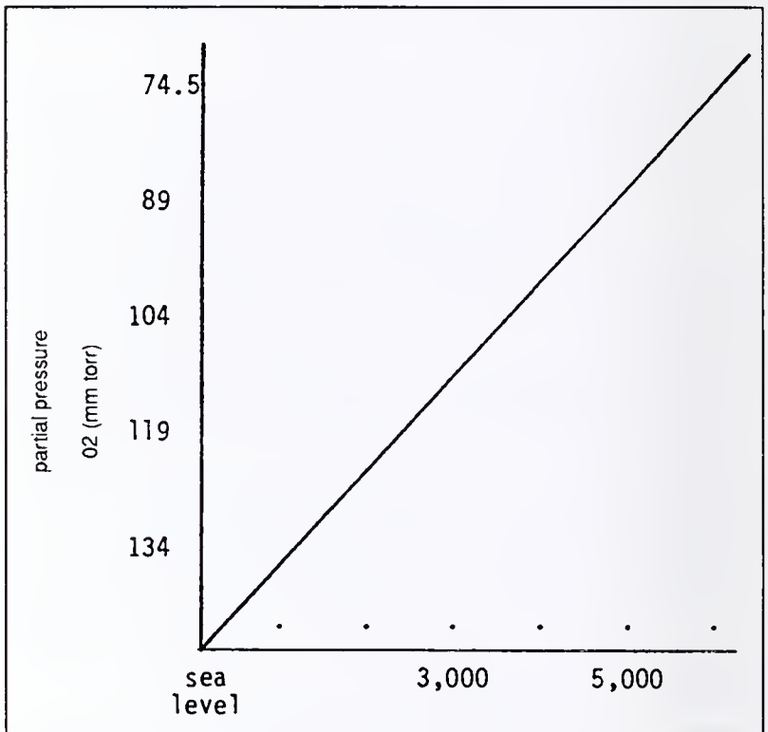



FIGURE 1: Relationship between altitude and concentration of inspired oxygen.

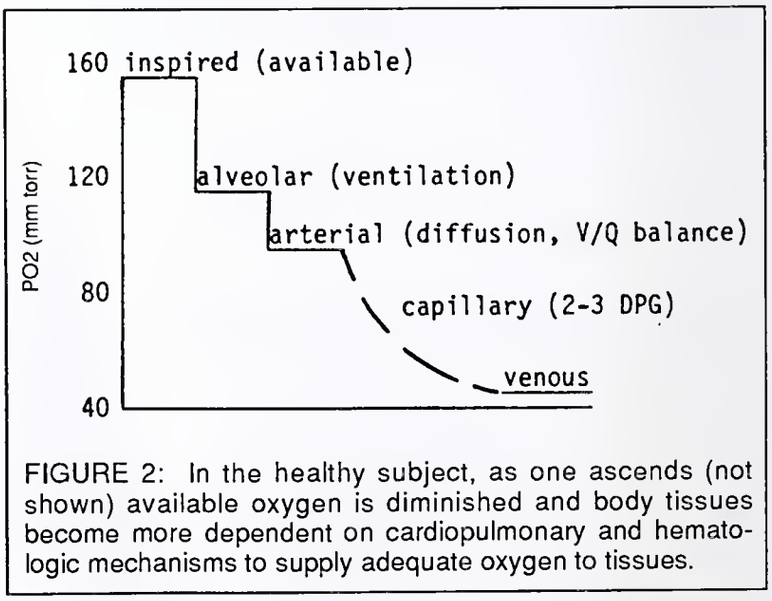



FIGURE 2: In the healthy subject, as one ascends (not shown) available oxygen is diminished and body tissues become more dependent on cardiopulmonary and hematologic mechanisms to supply adequate oxygen to tissues.

Assistant Professor and Chief, Pulmonary Division
Department of Medicine
John A. Burns School of Medicine
University of Hawaii
1356 Lusitana Street, Honolulu, Hawaii 96822

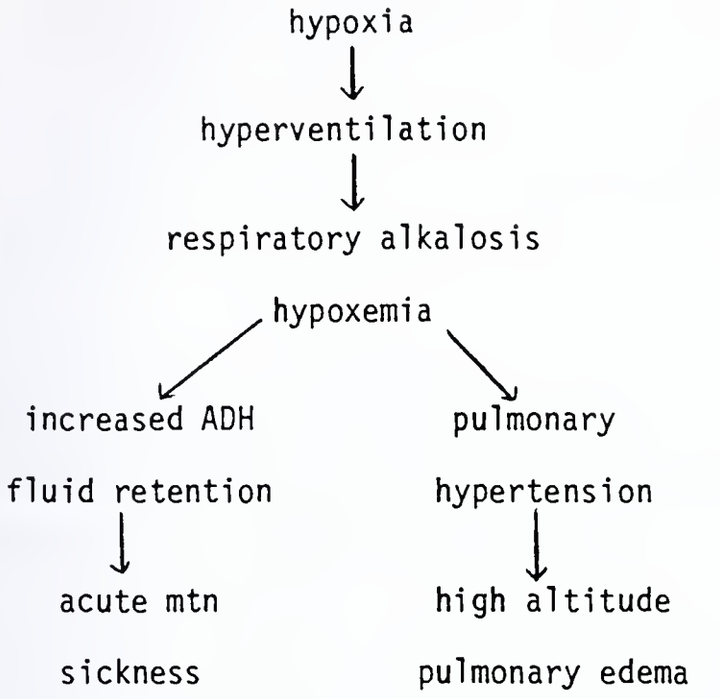



FIGURE 3: Basic adaptive mechanisms for acute high altitude exposure and cause of illnesses commonly seen at high altitude.

| Altitude (meters) | Disease (% incidence) | Common Symptoms | Treatment (* required) |
|---|---|---|---|
| 2,000 | hypoxemia (frequent | dyspnea | slow ascent $O_2$ prn |
| 2-3,000 | generalized (5) edema | swelling | mild diuresis |
| | thromboplebitis (rare) | painful leg swelling | ***descent for treatment** |
| 3-5,000 | acute mtn (50) sickness | headache nausea fatigue | pretreatment Diamox ASA |
| | high altitude pulm edema (1) | dyspnea cough congestion | ***$O_2$ *descent** |
| | retinal hemorrhage (1) | blind spots | descent |
| 5,000 | cerebral (1) edema | severe headaches hallucinations neurologic deficits coma | ***$O_2$ *descent** steroids? |

FIGURE 4: Life threatening illness rarely occurs in the healthy subject below 3,000 meters. *When such occurs, descent and supplemental oxygen are the only known treatments.

Since these measurements are not very commonly done at rest or during exercise one can expect and find a considerable variation in a person's adaptation to hypoxia. Besides this, hypoxia triggers a marked response by and in the body[3,4] (Fig. 3).

The "hypoxic drive" causes hyperventilation (fortunately for most, the decreased density of air reduces the effort needed to respire). This does not completely obviate hypoxemia; it routinely causes respiratory alkalosis. Hypoxemia results in pulmonary artery vasoconstriction and hypertension. Alkalosis causes an increased production of 2,3-diphosphoglycerate (DPG). With an understanding of these basic facts, we are able to speculate on the mechanisms involved in the disorders usually seen at high altitude.

## High altitude illnesses

As expected, symptoms and disease are related to the stress (precipated by high altitude in relation to underlying conditions). In fact, serious illness does not occur at 2,000 meters. Everyone is affected at > 3,000 meters because of hypoxemia, but it is a failure in the adaptive mechanism, or the presence of an underlying medical condition, that may result in a serious disorder and, rarely, a life-threatening situation.

## Diseases affecting "healthy" subject

**1. Acute mountain illness.** This is more uncomfortable than serious. Headache, nausea, weakness and shortness of breath are the usual symptoms which occur after rapid ascent to altitudes above 7,000 feet, and disappear after 1 to 2 days at that altitude. The suggested causative mechanism is hypoxemia with mild cerebral edema. This can be alleviated by prophylactic treatment with acetozolamide or by slow ascent.

**2. High altitude cerebral edema and encephalopathy.** In those who trek above 14,000 feet, a more severe dysfunction of the central nervous system occurs, though rarely, with hallucinations, sleepiness, symmetrical neurologic deficits and sometimes coma. Immediate descent, oxygen and perhaps steroids are indicated to prevent permanent neurologic deficits or death.

**3. High altitude retinal hemorrhages.** Small hemorrhages commonly occur and may temporarily affect vision, especially if they involve the macula. However, descent clears the hemorrhages and vision returns to normal.

**4. High altitude pulmonary edema.** The most common, severe, and potentially life-threatening disease that happens with moderate high altitude exposure is high altitude pulmonary edema (HAPE). HAPE affects young "healthy" subjects at above 3,000 meters and unless treated promptly and effectively may lead to death. The victim experiences chest pain, dyspnea and cough; this may rapidly lead to frank pulmonary edema. Supplemental oxygen must be given and the patient transported immediately to lower altitudes. The usual methods of treatment of pulmonary edema such as morphine, diuretics and digitalis are not efficacious and may complicate the picture by causing postural hypertension and shock. A slow ascent may be preventative, but premedication has no proven worth.

**5. Generalized edema.** Massive generalized edema may

*(Continued)* ▶

occur in some people even at low altitudes and may respond to diuretics. Thrombophlebitis and pulmonary embolism are more likely to occur if treatment is not instituted promptly (Fig. 4).

In the healthy subject, diseases associated with high altitude exposure, though varied in expression, seem to have in common abnormal retention of water in tissues damaged by hypoxia, or because of inadequate "normal" mechanisms. To be on the safe side, oxygen should be given and descent advised. For the individual whose judgment seems to be clouded by hypoxia, this is always the prudent course. In a group that is experienced and has good judgment, symptomatic treatment for benign conditions is a satisfactory alternative.

### High altitude exposure in patients with medical problems

In patients with diseases that are extremely sensitive to hypoxia, or whose adaptive mechanisms are poor, even moderate high-altitudes (≤ 3,000 meters) may cause problems.

**1. Altered hypoxic response.** In persons who do not adjust readily to hypoxia or who have blunted respiratory drives to alkalemia, high altitude may be dangerous. These are usually persons with disease-causing $CO_2$ retention even at sea level.

**2. Patients in whom hypoxemia cannot be tolerated.** Coronary artery disease, cerebral vascular insufficiency, sickle cell disease and severe anemia are obviously conditions that preclude exposure to high altitude.

**3. Persons who cannot increase ventilation sufficiently.** It seems paradoxical that many patients with chronic bronchitis and asthma do surprisingly well at high altitude. It is well-known that patients with obstructive lung disease may have obstruction in small or in large airways (or in some combination thereof). If obstruction is in the small airways, the decreased density of air at high altitudes offers no ease to the movement of air; these patients do badly. If obstruction is in the large airways, however, the rarefied air may actually be beneficial. No study has been reported (nor would it be entirely ethical) to test this hypothesis.

**4. Restriction of the pulmonary capillary bed.** HAPE occurs with alarming frequency in people with congenital absence of a main pulmonary artery[6] and since the mechanism appears to be one of pre-capillary edema, these persons with mild to moderate loss of cross-sectional area of the capillary bed might be at greater risk. Patients with emphysema, pulmonary resection, or interstitial lung disease are at great risk and exposure to high altitudes should be discouraged. If HAPE can occur even in the "healthy", it is a given that patients with these disorders should be totally excluded.

The patient on cardiopulmonary medications likewise should also be discouraged from going to high altitudes because the effectiveness of these medications may be variable.

### The use of drugs

Medications should be used sparingly and by those knowledgeable in the physiologic consequences and adaptations to high-altitude exposure.

**1. Oxygen.** Oxygen should always be available and used freely if there is any doubt about what occurs. Lightweight, efficient, oxygen containers are available and easy to use.

**2. Diuretics.** Despite the relatively frequent symptoms and signs of excess fluid, these medications should be used with great care. The edema is usually extravascular so that a rapid diuresis may compound a difficult situation already begun. Acetozolamide is beneficial by preventing a blunted hypoxic drive and so should be used both *before* and *during* the ascent.

Other respiratory stimulants, such as progesterone, have some theoretical appeal but their side effects of fluid retention make them of lesser or of no value. A mild respiratory stimulant such as theophylline may be useful but, to my knowledge, it has not been properly evaluated.

**3. Hypnotics and sedatives.** Despite the frequent symptoms of muscle cramps, headache and sleeplessness, hypnotics and sedatives (including alcohol) because of their effect on respiratory drive and judgment should never be used.

**4. Tobacco.** Inadvertent inhalation of carbon monoxide ties up badly needed hemoglobin and should be strictly avoided (Fig. 5).

General advice to the person who plans to ascend rapidly includes the following:

a. If you have known cardiopulmonary disease avoid exceeding 2,000 meters.

b. If you are a healthy traveler who plans an ascent over 3,000 meters, you should take acetozolamide 250 mg tid the day before and the day of ascent.

c. You should know the signs and symptoms of benign and significant high altitude illnesses and how to treat them.

d. Oxygen and a planned route for rapid descent should always be available and taken if there is any suspicion of significant illness.

e. The use of tobacco, alcohol, sedatives and hypnotics is strictly forbidden.

f. If you plan to work at high altitudes, you should have a thorough medical evaluation that includes a history,

| Drugs | Effect | Usefulness |
|---|---|---|
| 02 | relieves hypoxemia | dyspnea, HAPE, cerebral edema |
| diuretics | | |
| 1) Diamox | causes acidosis increases hypoxic drive | pretreatment AMA |
| 2) Lasix® | diuresis | generalized edema not HAPE |
| hypotics, sedatives, alcohol | decreases drive impairs concentration | never |
| tobacco | binds Hgb | never |

FIGURE 5: Pretreatment with Diamox and supplemental oxygen are the only medications proved useful at high altitude.

physical examination, complete blood count, chest roentgenogram and possibly exercise pulmonary function testing for hypoxic and hypercapneic drives.

g. Because of possible effects of hypoxemia on the fetus, if you are pregnant you should not ascend above 3,000 meters.

h. If you become ill at modest altitudes, a complete appraisal should be done at that point and further exposure to higher altitudes limited.

## Conclusion

Rapid exposure to moderate (3,000 meters) and high (5,000 meters) altitudes is uncomfortable for most people and life-threatening for some. With a knowledge of the physiologic principles of adaptation to high altitude and understanding of the signs and symptoms of diseases associated with such exposure, the physician and the traveler will be able to prevent both serious illness and death.

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## OCCUPATIONAL HEALTH TRAINING *(Continued from page 87)*

State of Hawaii. In order to achieve these key health objectives, a large number of occupational-health professionals will be needed. The University of Hawaii School of Public Health expects to play an important role in their training.

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## ENVIRONMENTAL EPIDEMIOLOGY *(Continued from page 81)*

dence of 1 in 1,000, a study population of 10,000 is required. The risk of having any cancer per year is 3-4 per 1,000 population. The incidence of having a particular cancer is much lower and the study group required must be much larger.

Other criteria for causality have to be considered, especially biologic plausibility. Toxicologic data from studies of cell cultures or in animals often supply information which cannot be duplicated in human studies because it is impossible to expose the latter to experimental doses of toxic agents. Caution is advised, therefore, when so-called plausibility is used as a substitute for detailed information.

What seems "reasonable" in regards to causality is not necessarily true. Even though environmental epidemiology has made very valuable contributions to our knowledge of environmental hazards, the results reported in every study should be critically evaluated, keeping in mind the difficulties inherent in their methodology.

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AIR FORCE

# Toxic substances in the environment affecting respiratory function of people in Hawaii

Carl P. Hallenborg MD*
Nancy Marsh**
Steven Moser MD***

*In this trilogy we have collected data from authors who are concerned with patients with respiratory complaints. Surprisingly there are unique problems in the residents of our State. The full impact of problems known to cause respiratory illnesses, such as asbestosis, will not be known for years to come. Other problems such as the effect of sugarcane burning are just now being identified and may show a parallel to the inhalation of asbestos dust. VOG may be simply an irritant or it may explain in part the high incidence of asthma in our State. Clearly more work needs to be done to explain the pathophysiology, the risk and possible treatment for the consequences on people of these putative toxic substances.*

## Introduction

Inhaled substances can affect our health adversely, but our knowledge of how much of these do and which of us are affected is incomplete. Although it is insufficient to claim injury by coincidental exposure, we must seek to identify substances that injure us and make sure that such exposure is reduced. The purpose of this article is to review some of those inhaled substances thought to endanger the people of Hawaii.

First, what constitutes an adverse respiratory health effect? Some pollutants in small concentrations affect all adversely. Many more pollutants affect a few of us only under certain circumstances. Both conditions are considered an adverse health effect. For example, nitrogen mustard in minute concentrations can kill people. Asbestos dust in a smoker increases the risk for lung cancer. Accordingly, the Environmental Protection Agency (EPA) has portrayed the burden of pollution as manifested by a spectrum of biological responses such as in Figure 1[1]. In the population exposed, many may show a physiologic effect, pathophysiologic changes and some morbidity and mortality. We presume that the greater number of people exposed, and the higher the dose, then more of them will be adversely affected. The American Thoracic Society in a position statement lists 1) interference with normal activity, 2) episodic respiratory illness, 3) incapacitating illnesses, 4) permanent respiratory injury and 5) progressive respiratory dysfunction, as clinically important in the determination of

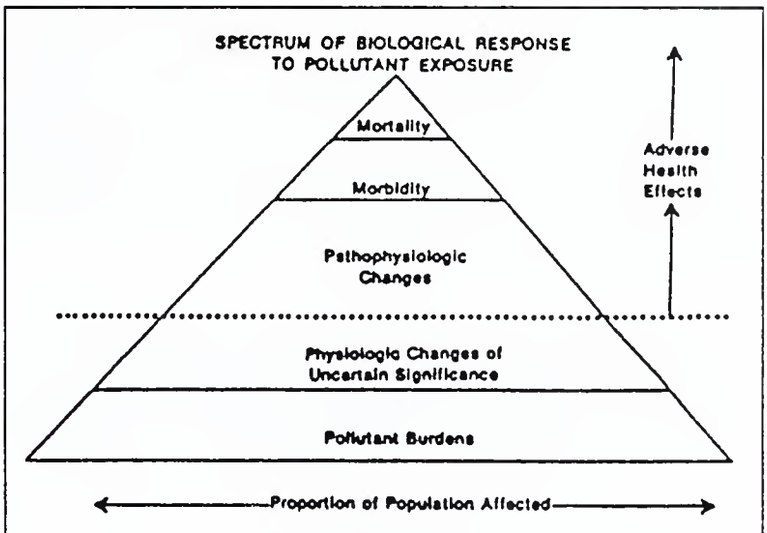



FIGURE 1
Spectrum of biological response to environmental toxin

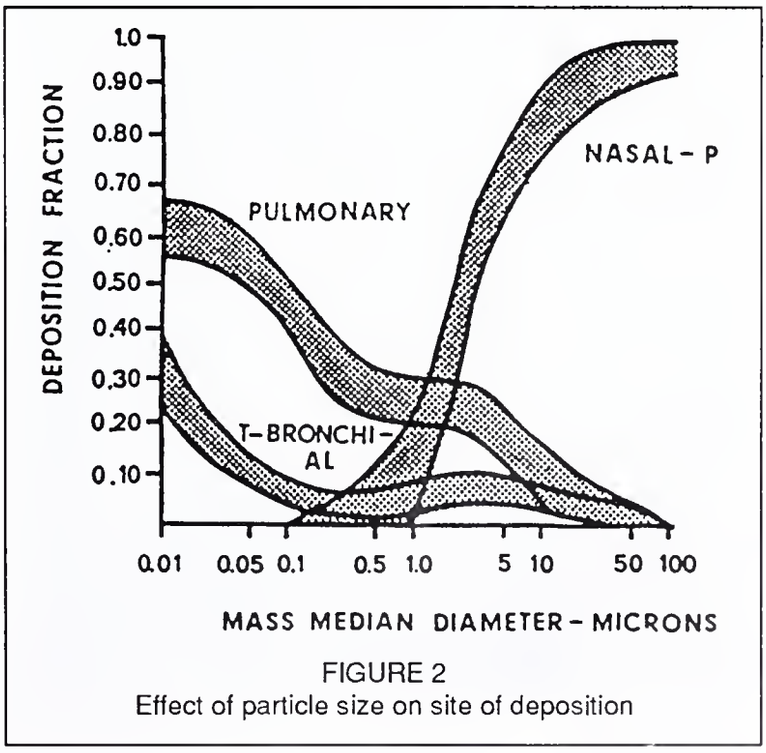



FIGURE 2
Effect of particle size on site of deposition

*(Continued)* ▶

* Chief, Pulmonary Division, Dept. of Medicine
Assistant Professor
John A. Burns School of Medicine

** Medical Student IV
John A. Burns School of Medicine

*** Internist Nephrologist
1883 Mill Street
Wailuku, Maui

adverse respiratory effect. Not stated but inherently obvious is that individuals such as asthmatics may be more sensitive to inhaled pollutants than others.

In order to identify a possible adverse health effect, we must identify the offending substance, how it gains access to the individual, and the mechanism of injury. Steps can be taken to minimize exposure, to identify those exposed, and to treat affected individuals or whole populations.

Many pollutants have been identified. Pollutants gain access to the respiratory tree according to particle size[2]. In Figure 2 we see that the smaller the particle size the more likely it is to gain access to the lower reaches of the respiratory tract. Thus, particles of size < 1 micron are likely to reach small bronchioles and the pulmonary parenchyma. Although hundreds of pollutants are known to cause problems, certain ones are more prevalent and should be considered in the differential diagnosis in certain medical situations and are worthy of attention below[3].

Problems of current concern in Hawaii include exposure to asbestos, the burning of sugarcane, and VOG. We will look at each problem from the point of view of the offending substance, the population at risk, the potential for injury and the implication that further study may be needed. Table 1 summarizes the approach to the subject. Question marks indicate data that are suspected but not proven.

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### 1. Asbestos related disease in Hawaii

The effect of asbestos dust on the health of man has been extensively studied in the terms of the offending agent, the pathogenesis and the markers of injury. Briefly, inhalation of asbestos dust over a prolonged period of time causes a retention of dust in the lung. This dust burden in the susceptible host causes pleural thickening and pulmonary fibrosis and increases the risk of bronchogenic and pleural cancer[1].

An industry in Hawaii that utilized asbestos (shipbuilding) existed long before effective control over exposure was established. In addition the use of asbestos in numerous applications (eg home building, brake linings), affected thousands of residents of Hawaii, making them at risk for asbestos-related disease. As many as 8,000 persons were employed at Pearl Harbor during World War II; they were directly exposed. Some brought asbestos-laden clothing home to be laundered by their families.

There is no specific treatment for asbestosis. The fibrosis of the lung initiated by the burden of dust in the susceptible host is relentless and not affected by cessation of exposure nor by medication. Bronchogenic carcinoma of the lung of any etiology has a poor prognosis. A solitary nodule, in the absence of metastases, is a candidate for resection. Pleural-based cancer, mesothelioma, is not treatable.

The diagnosis of asbestosis and asbestos associated malignancy is most often a cause for compensation. The diagnosis should be entertained in the patient with dyspnea or cough of unknown etiology. Such a patient must have a well-documented history of exposure over a considerable period of time, followed by a lag period of 15 to 20 years. This requires an extensive environmental and occupational history be taken.

A careful evaluation of the chest roentgenogram is the next step. Fifty percent of patients with a significant history of exposure will demonstrate at least some pleural changes. It is debatable whether pleural changes alone indicate pulmonary affect. Such changes indicate a susceptible host; however long-term follow-up is necessary in order to define disability. Pulmonary changes, such as bibasilar fibrosis and other more extensive involvement are not specific.

Perhaps the greater benefit of taking serial chest roentgenograms would be the earlier diagnosis of bronchogenic carcinoma at a stage which may be treatable. Accordingly, a patient with documented extensive exposure to asbestos dust should have periodic chest roentgenograms.

Pulmonary function tests are a critical part of the evaluation. Spirometry is also indicated in order to identify obstruction. Obstruction not helped by bronchodilators is supportive of the diagnosis. Lung volume tests may show a restrictive process (Total lung capacity less than 80% of predicted.) Diffusing Lung Capacity for Oxygen (DLCO) is decreased in pulmonary fibrosis and may be the first indication of pulmonary asbestosis.

The clinical diagnosis of asbestosis is not easy. No single finding is specific nor is it necessary for all findings to be in place in order to establish the diagnosis. A reasonable consensus to the approach for a clinical diagnosis is provided by the American Thoracic Society[2]. (See appendix)

We have followed many patients with documented heavy exposure to asbestos occurring over a 20-year period prior to evaluation. Data is presented here on 74 patients. Each patient had a history of exposure (including a history of smoking), 4 views of the chest by roentgenogram and pulmonary function

**CRITERIA FOR THE CLINICAL DIAGNOSIS OF ASBESTOSIS**

1. A reliable history of exposure.
2. An appropriate time interval between exposure and detection.
3. Clinical criteria:
   a) Chest roentgenographic evidence of type "s", "t", "u", small irregular opacifications in profusion 1/1 or greater.
   b) A restrictive pattern of lung impairment with a forced vital capacity below the lower limit of normal.
   c) A diffusing capacity below the lower limit of normal.
   d) Bilateral date or pan-inspiratory crackles at the posterior lung bases not cleared by cough.

(Accepted by the American Thoracic Society)

TABLE I

| Patients | N | Pleural Asbestosis N | (%) | Pulmonary Asbestosis N | (%) |
|---|---|---|---|---|---|
| Non-smokers | 45 | 22 | (49) | 23 | (51) |
| Mild | 8 | 7 | (88) | 4 | (50) |
| Moderate | 8 | 3 | (38) | 2 | (25) |
| Heavy | 13 | 9 | (69) | 10 | (77) |
| | 74 | | | | |

Smoking history in relation to diagnosis of asbestosis in 74 patients with a documented history of exposure to asbestos dust. Percentages indicate number of positive findings.

TABLE II

| Asbestos Exposure | N | Pleural Asbestosis N | (%) | Pulmonary Asbestosis N | (%) |
|---|---|---|---|---|---|
| Mild | 9 | 4 | (44) | 4 | (44) |
| Moderate | 26 | 15 | (58) | 14 | (54) |
| Heavy | 40 | 22 | (55) | 23 | (58) |
| | 75 | | | | |

Degree of asbestos exposure in relation to diagnosis of asbestosis in 74 patients. Percentages indicate number of findings.

tests. A history of smoking was graded as mild (<10 pack-years), moderate (10-20 pack-years), and heavy (>20 pack-years). The exposure to asbestos was graded as mild (<10 years), moderate (10-20 years) and heavy (>20 years). Pleural asbestosis was defined as demonstrating any evidence of thickening of the pleura; pulmonary asbestosis was defined as changes indicating fibrosis on the chest roentgenogram and/or reduction of DLCO.

Table I compares our diagnosis of pleural and pulmonary asbestosis with history of smoking. Pleural changes are frequently seen but are not related to the amount of smoking. Pulmonary asbestosis appears more often in heavy smokers; this may indicate a synergistic effect. However, it is a known fact that smoking per se damages the lung.

Table II pits our diagnosis of asbestosis against the amount of asbestos exposure. Pleural and parenchymal changes are common and are not a function of the amount of exposure. Once a threshold of exposure has been established, the patient is ultimately at risk for asbestos-related disease.

These data are being presented to show that patients exposed to asbestos in Hawaii are indeed affected and that this is a health hazard in Hawaii. There is no doubt that asbestos dust should be avoided whenever possible. There is no evidence that a brief exposure is dangerous, however an extensive evaluation of the critical degree of exposure is expensive and not warranted.

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**Sugarcane burning in Hawaii: A possible health hazard**

The question has been raised whether incidental as well as chronic exposure to burning of sugarcane is detrimental to one's health. On the North Shore area of Oahu, residents living near a sugarcane factory have been exposed for many years to the smoke, fumes and debris that result from burning the leaves of the sugarcane. These inhabitants who live in close proximity have complaints of respiratory dysfunction such as dyspnea, coughing and wheezing; several have died of

*(Continued)* ▶

respiratory disease. Many still residing there have inquired about the possible connection between their symptoms and the burning of cane close by.

As part of the procedure in harvesting, the rows of cane are set on fire so that the excess leafage is burned away. The burning of the cane results in airborne suspended particles that may act as irritants to respiratory tract tissue, and thereby promote increased susceptibility to carcinogens.

Previous studies have shown that these particles are biogenic silica fibers[1] that, when inhaled, may lead to lung cancers similar to those caused by asbestos fibers. The silica fibers are being released in the sugarcane growing regions of the United States, as well as in a number of foreign countries, during the worldwide practice of open-field burning of cane leaves and cane "trash." Epidemiological studies done in these areas suggest a relationship between biogenic silica exposure and cancer. The evidence for these fibers as an etiological agent in cancer comes from several sources worldwide.

In 1976, Das et al[2] documented 5 cases of rare mesothelioma in persons who were involved with sugarcane farming, or an allied trade, but who had had no previous exposure to asbestos (Mesothelioma is an uncommon neoplastic condition having a well-established association with exposure to asbestos[3]. Its incidence has been reported to range between 0.02% and 0.2% of all autopsies[4]).

In a 1983 laboratory study by R. H. Newman of the Imperical Cancer Research Fund in England[1], the presence of silica fibers resembling asbestos fibers was noted in the ash of sugarcane leaves burned in the harvesting process. In a report published in 1986[5], Newman found the biogenic silica to be 0.85 um in diameter and 10 to 300 um long, which is within the size range of asbestos fibers that are carcinogenic. Newman argued that there was significant evidence worldwide (China, India, Iran, Africa, Australia, and Louisiana) to suggest strongly that "siliceous plant fibres, with dimensions similar to asbestos, are involved in the causation of mesothelioma and lung cancer in sugarcane workers."

In the United States, a Louisiana State University study done in 1982[6] showed a direct correlation between that state's high incidence of lung cancer and sugarcane farming. Rothschild and Mulvey interviewed the next of kin of 284 persons (randomly chosen) who had died of lung cancer during 1971 to 1977 in Southern Louisiana. Of the deceased, 38% had been employed for at least 6 months as sugarcane farm workers (statistically significant for $p < 0.0001$) compared to 20% in the matched controls. After adjustment for smoking, the relative risk estimate of lung cancer mortality for sugarcane farm workers was 2.4 (95% confidence limits, 1.7 to 3.6). The sugarcane farmers who died of lung cancer had worked for longer periods in the sugarcane farm industry than did those sugarcane farmers in whom lung cancer did not develop ($p = 0.006$). Two of the deceased sugarcane farmers with no discernible exposure to asbestos were found at autopsy to have had mesothelioma.

According to a 1979 study by Rothschild et al[7], many of the regions in Louisiana that grow sugarcane show high mortality due to lung cancer. In the continental US, sugarcane production is a major industry in only 2 states other than Louisiana: Florida and Texas. Two of the 3 sugarcane-growing counties of Florida have a high mortality due to lung cancer. In Texas, none of the 3 counties has this high a mortality rate. However, sugarcane farming in Texas was started only after 1970. Thus, sufficient time may not have elapsed for the disease to be manifested.

A study of Florida sugar operations conducted by the National Institute for Occupational Safety and Health (NIOSH)[8] in 1985 showed that when sugarcane is burned, silica is released into the atmosphere in the form of fibers ranging from 3.5 to 65 um long (mean = 12 um). The samples in the study contained as many as 58,000 inorganic fibers per cubic meter of cane-smoke-polluted air and 300,000 fibers per cubic meter in the air during the harvesting of the burned crop. More than half of the fibers in one sample were purely or mainly silica in composition. In 1984, NIOSH had stated in regard to asbestos that there is no safe concentration of exposure to asbestos, but recommended that exposure to asbestos fibers greater than 5 um in length not exceed 100,000 fibers per cubic meter of air[9].

The Hawaiian Planters Association has estimated pre-harvest burning of cane fields in Hawaii annually consumes between 1.7 and 2.5 billion cubic feet of trash. If only 1% of the resulting ash from these burnings consists of asbestos-like, fine, biogenic fibers, it may well constitute a health threat to residents in the cane areas.

Accordingly, inhabitants of the North Shore who live in close proximity to sugarcane fields were asked and agreed to be part of our study in 1984, 1985, and 1986.

**The experiment**

Fourteen residents living within a 3-block radius of a sugarcane factory were given health and breathing questionnaires to determine their past, present, and family medical histories (especially a full account of respiratory symptoms), their cigarette smoking habits, lifestyle, years of exposure and degree of exposure to sugarcane burning and other environmental hazards. These residents then underwent a physical exam; chest radiographs were obtained.

Pulmonary function tests were performed to determine the type and degree of physiologic impairment resulting from a particular disease process. These were used in the early detection of lung disease and the assessment of its severity and progression[10]. In our study, a spirogram was used to measure the forced vital capacity (FVC) of the residents. The volume of the FVC exhaled in the first second constitutes the 1-second forced expiratory volume (FEV 1), which was also measured. From the FEV, the rate of flow of the exhaled air was computed. The standard against which this is compared is the forced expiratory flow of 25 to 75% of the FVC (FEF 25-75%). The forced expiratory flow for 50% of the FVC (FEF 50%) was also computed. The total lung capacity (TLC) and residual volume (RV) were determined by the helium dilution technique. The diffusing capacity (DLCO) was measured by a single breath test using carbon monoxide (see Table 1 and Figure 1).

The onset of symptomatic asbestosis is uncommon until at least 20 to 30 years after exposure[11]. Because the actual years

TABLE 1

Pulmonary function test values taken over a period of 3 years in terms of percentage of residents living near a sugarcane factory (values corrected for age and smoking).

| | FEV 1 | FEF 50% | FEF 25-75% | TLC | VC | |
|---|---|---|---|---|---|---|
| DLCO | | | | | | |
| Normal | 86% | 7% | 0% | 14% | 57% | 21% |
| Reduced | 14% | 93% | 100% | 86% | 43% | 79% |

| | RV |
|---|---|
| | — |
| Normal | 7% |
| Slightly Elevated | 86% |
| Elevated | 7% |

of exposure varied from 4 to 40 years, not all the residents examined had signs or symptoms of respiratory problems. However, more than half the residents complained of dyspnea and a nonproductive, irritating cough; the two most frequent initial symptoms of asbestosis[11]. Auscultation of the chest revealed some end-respiratory wheezing on forced expiration in about a third of the residents. Chest roentgenograms were unremarkable, showing no pleural plaques. In asbestosis, the plaques usually are bilateral and have to be relatively extensive, or contain abundant calcium, in order to be visualized[11].

There is evidence that the earliest effects of the exposure to asbestos dust affects primarily the small airways in the peripheral parts of the lung; therefore, this may not be detected on routine pulmonary function tests[11,12]. However, the data (Table I) does show that the majority of the residents have a restrictive condition, demonstrated by normal values for FEV 1 and reduced values for TLC and DLCO. Although the FEF 25-75% is a sensitive guide to the presence of airway obstruction, flow rates may be reduced in restrictive lung disease secondary to a low vital capacity[10]. Almost half of the residents had a reduced vital capacity. Also, decrements in FEF 25-75% and FEF 50% reflected the presence of small airway disease.

The characteristic functional abnormalities in asbestosis are reduction in vital capacity (43% in our study) and in total lung capacity (86% in our study), a normal, or sometimes slightly elevated, residual volume (total 93% in our study), and reduction in diffusing capacity (79%) for carbon monoxide[12]. The pulmonary function test data seems to indicate a possible development of a restrictive lung disease, conceivably asbestosis. More important, however, than the functional definition of an advancing disease is its detection at an early stage. Diffusing capacity seems to relate closely to the degree of disability from asbestosis, and attempts to detect the disease at a pre-symptomatic stage have concentrated on the measurement of this, as well as of vital capacity. An alarming 79% of the residents had a decreased DLCO. However, impaired diffusion is more strongly related to smoking than to the intensity of exposure to asbestos[11]; 64% of the residents were or had been smoking cigarettes.

It appears that the pulmonary function test data does not show clearly the presence of asbestosis; however, it does suggest the presence of some lung disease, with reductions mainly in FEF 50%, FEF 25-27%, TLC, DLCO, as well as a slightly elevated RV.

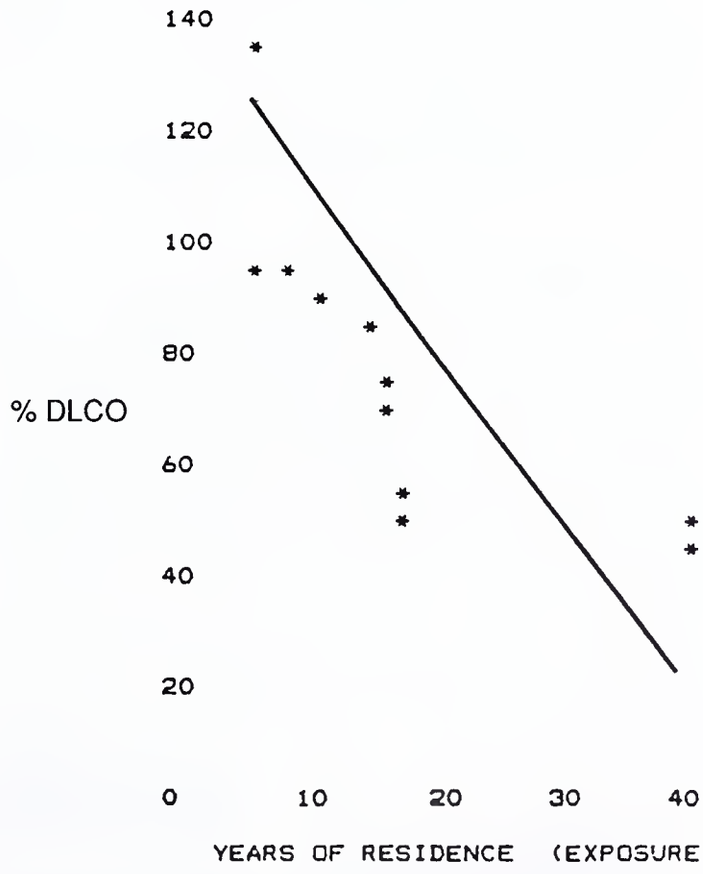
The physical exam, and symptoms of coughing and dyspnea, indicated a respiratory problem among a good number of residents living in the area near the sugarcane factory. With the exception of one person, they had had no known previous exposure to asbestos. Several residents noted that their respiratory problems began after moving to the North Shore area, and some experienced an improvement upon living away from the area.

There did not appear to be a positive correlation between the severity of symptoms and the number of years of residence (exposure) in the area in all of the residents. On the other hand, there seemed to be a positive correlation with the decrease in values in the pulmonary function tests had the number of years of residence (exposure in the area, especially in DLCO (Fig. 1).

No significant changes in pulmonary funciton test values during the 3 years of testing of each resident were observed. However, it is advisable for those with likely constant expo-

FIGURE 1

Number of years of residence (exposure) near a sugarcane factory vs % DLCO for each resident




Values are an average taken over a 3-year time period.

*(Continued)* ▶

sure to asbestos-like particles to be tested yearly, since even a brief exposure, for as short a period as 2 to 6 months, may produce asbestosis or pleural disease more than 20 to 30 years later[11].

There may or may not be a connection between sugarcane burning and the occurrence of respiratory disorders in the nearby residents, but further testing done for long periods of time, utilizing a larger cohort of residents, should provide a more accurate indication of a possible health hazard in Hawaii, as well as elsewhere.

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## The effects of "VOG"* on respiration

Most physicians and their patients on the island of Hawaii believe there is an increase in the morbidity and mortality of patients with asthma and that this is due to the frequent and continuous eruptions of the Kilauea Volcano. Subsequent to an eruption, asthmatics make more frequent visits to their physicians, emergency rooms, and often require hospitalization. There have been 6 deaths due to asthma on the Island of Hawaii this past year (1990), more frequent than the national average. However, spot reviews of emergency room records conducted by the CDC in 1982 and a questionnaire conducted by the Hawaii State Department of Health (DoH) failed to document this widespread clinical impression.

The volcanic emissions, measured at the site, consist primarily of $CO_2$, water vapor, and $SO_2$. Sulfur dioxide, or $SO_2$, is the most abundant, potentially noxious, gas and it has been emitted at the rate of 300-1000 tons per day during this 3-year-long eruption. Levels of $SO_2$ in the populated areas were below the standards set by the DoH.

On the other hand, volcanic eruptions have been a known hazard from the ancient times of the Roman empire when Mount Vesuvius buried cities such as Pompeii. Few health professionals know, however, that volcanoes are also a current health hazard. As many as 55,000 people have died in the 20th century and countless more have suffered lesser effects. The best and most recent studies involved the unexpected eruptions of Mount St. Helens in 1980 in the Pacific Northwest. This was studied in detail by Dr. Sonia Buist and her colleagues.

From her studies it is clear that scientific methods previously had not been used and the effects were underestimated. Other volcanoes have caused different kinds of problems, depending on the type of eruption and the character of the emissions[1].

The characteristics of the emissions from Kilauea have been delineated[2]; the emissions contain $H_2O$ (87%), $SO_2$ (12%), $CO_2$ (8%), as well as minute concentrations of $H_2S$ and CO (carbon monoxide).

The most likely cause of respiratory toxicity is $SO_2$ both by its high concentration and high potential for causing toxic particulate matter such as sulfites and sulfates. The $SO_2$ interacts with water in sunlight to form an acid $H_2SO_4$. This has recently been shown through carefully controlled studies to cause respiratory problems in humans. Ostro[3] reports that a group of asthmatics exposed to acid aerosol react in a predictable way in proportion to the increase in the acid (Figure 1). Peak flow meters were used to document end-points. Utell[4] studied only 12 asthmatics but showed clearly that airway conductance significantly dropped after exercise and after a 4-hour exposure to $H_2SO_4$ 450ug/m3 (Figure 2). Furthermore, they were able to document that 450ug/m3 was an important threshold level.

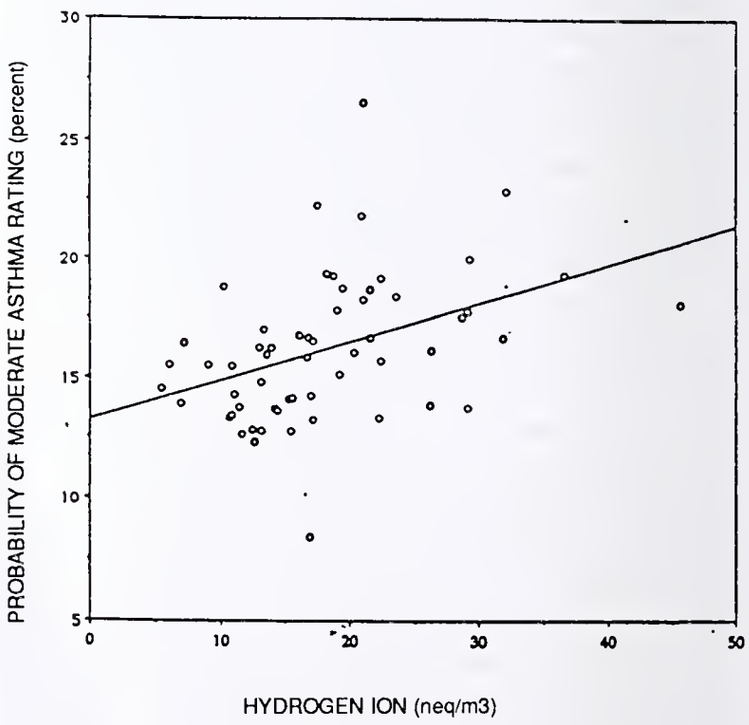



FIGURE 1
Moderate asthma rating versus hydrogen ion, controlling for covariants

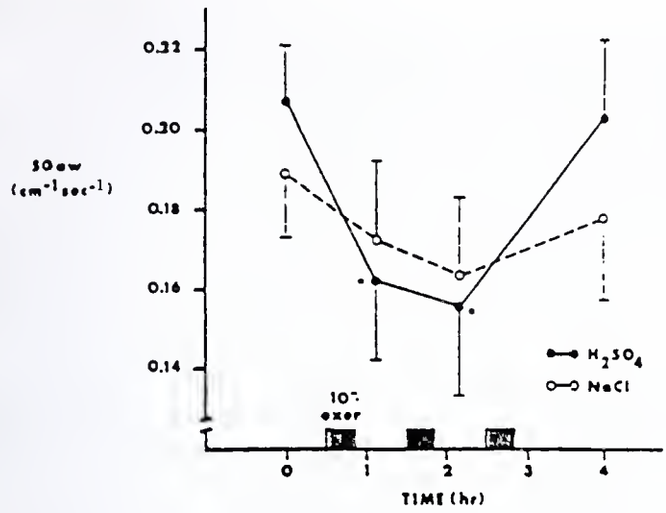



FIGURE 2

Mean values of specific airway conductance (SGaw) before, during, and immediately after the 4-hour exposure to 450 ug/m3 $H_2SO_4$ and NaC1 aerosols for 12 asthmatics. Significantly greater decrements occurred with $H_2SO_4$ compared to Nac1 following the first and second exercise periods ($p<0.05$). Bars represent standard error of mean.

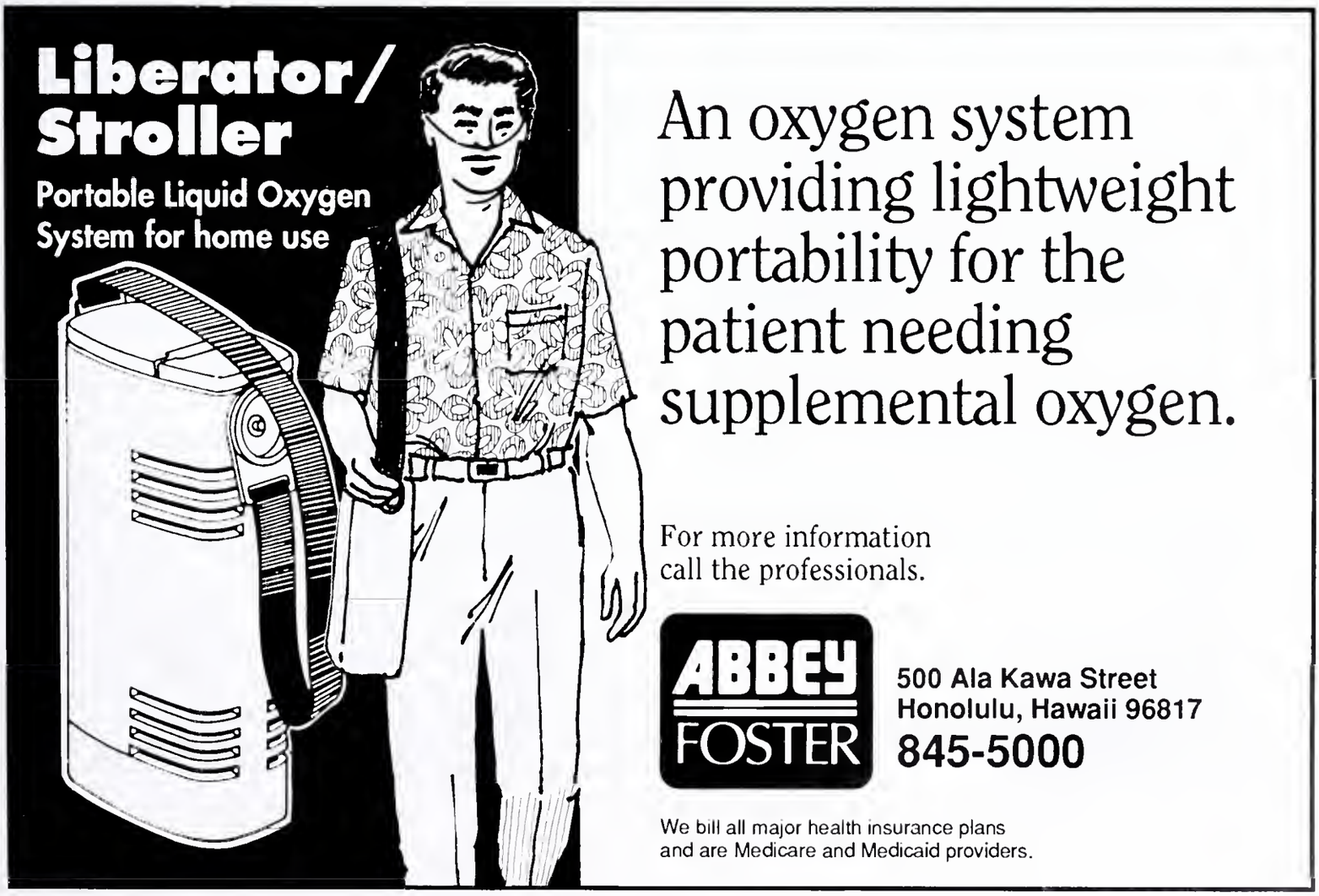
We do not know whether sulfur dioxide from Kilauea acts in this way, whether particulates reach toxic levels, or whether these toxic chemicals affect the Hawaiians. Consequently, the Hawaii Lung Association has established monitors as the result of a proposal submitted by Ed Morgan MD and Mr. James Morrow. A longitudinal clinical study has been launched by Drs. Hallenborg, Matthews and Ono. Even if "toxic levels" are not documented by these monitors, it is possible that lower levels of particulates may injure susceptible individuals, such as asthmatics with mild infections or after activity. No one has done such a study previouisly.

*VOG = Volcanic Fog, a colloquialism

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# Evaluation of human exposure to the heptachlor epoxide contamination of milk in Hawaii

Dean B. Baker MD MPH*
Sherry Loo MD**
Joyce Barker RN DrPH***

*The commercial milk supply on Oahu was contaminated by heptachlor epoxide for as long as 15 months during 1981-82 at levels possibly as high as 1.2 ug/g, fat basis. Following the contamination, several investigators attempted to evaluate potential adverse health outcomes, especially among infants and young children. However, results of the initial investigations are inconclusive due to lack of reliable measures of heptachlor exposure, use of non-random sampling techniques, and lack of definitive health outcomes attributable to heptachlor epoxide. The design of a current study to assess the body concentrations of heptachlor epoxide and related pesticides in Hawaii is presented. The study is designed (1) to relate these concentrations to prior exposure via the milk contamination, and (2) to assess the reliability of breast milk and serum pesticide concentrations as objective biological markers of body burden. No attempt is made to relate these data to health outcomes; instead, the findings may provide the foundation for future health studies or surveillance of environmental exposure to pesticides in Hawaii.*

## Introduction

Heptachlor is a chlorinated cyclodiene pesticide that has been used for > 30 years for the control of termites and soil insects. It is metabolized primarily to heptachlor epoxide, which is of comparable toxicity but more stable in biological systems[1]. Despite its long use, little information exists on the toxicity of heptachlor in humans[2]. Epidemiologic studies have been limited mostly to pesticide manufacturers or applicators[3-6], although case reports of individuals exposed to chlordane containing heptachlor have noted central nervous system toxicity[3,4,7], aplastic anemia and acute leukemia[3,4], and neuroblastoma in children with a history of pre- or post-natal exposure to chlordane[8]. Interpretation of these studies is limited due to inadequate exposure characterization, concurrent exposure to multiple pesticides, small study populations and short follow-up periods of mortality studies.

Animal studies of heptachlor have demonstrated acute central nervous system toxicity[9], subacute hepatic effects[1], and decreased fertility and gestation length with chronic feeding[7,11]. Heptachlor consumption leads to liver cancer in mice and possibly rats[3,12,13]. Given the toxicity of heptachlor in animals and the recent U.S. Environmental Protection Agency (EPA) action[14] to ban further use of heptachlor based primarily on animal studies, it is relevant to assess potential health effects in humans after instances of unintended exposure. A contamination of the milk supply on Oahu during the early 1980's represents such a case of human exposure and forms the basis of this review of earlier health studies related to the contamination. The objectives and methods of a current study to assess body concentrations of heptachlor and related pesticides in Hawaii are also presented.

## Review of the contamination and initial health studies

In January 1982, the State of Hawaii Department of Health (DoH) found that the commercial milk supply on the island of Oahu was contaminated with heptachlor epoxide (HE) substantially in excess of the present Food and Drug Administration (FDA) action level of 0.1 ug/g (ppm, fat basis)[15,16]. Subsequent testing of stored samples established that the contamination may have begun in the Fall of 1980[17-19]. EPA "reasonable worse case estimates" suggested that between April 1981 and April 1982, commercial milk may have contained as much as 1.2 ug/g HE. For comparison, a surveillance program of the entire United States commercial milk supply in 1979-1982 found only 2 of 1,700 samples exceeding 0.12 ug/g HE[18].

The source of HE in the milk was chopped leaves of pineapple plants used in dairy cattle feed on Oahu[15,20]. Heptachlor was used to control ants on pineapple plants and had been used similarly for several years without incident. Due to events that remain unclear, the feed was contaminated with heptachlor probably in 1980, resulting in excretion of HE in the milk of dairy cattle. The contamination was not reported until March 1982, after which there were 11 successful milk

* Division of Environmental and Occupational Medicine
Mount Sinai School of Medicine, New York

** Department of Pediatrics
John A. Burns School of Medicine, University of Hawaii

*** Intercollegiate Center for Nursing Education
Washington State University

Reprint requests:
Dean B. Baker MD MPH
Mount Sinai School of Medicine - Box 1057
One Gustave L. Levy Place
New York, NY 10029

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recalls and monitoring of the milk supply to ensure that levels were within EPA acceptable levels.

The potentially exposed population was the entire milk-consuming population of Oahu. Milk from Oahu's 19 dairy farms (18 of which used pineapple chop for feed) was pooled at the only two processing facilities; therefore, contaminated milk was distributed throughout the island. With rare exceptions, milk produced on Oahu was consumed by Oahu residents and was not exported to the Neighbor Islands. Some speciality products, such as ice cream, were sent to the Neighbor Islands; however, the level of contamination in these products was quite low since much of the butterfat in these products came from uncontaminated sources, such as from New Zealand. Thus, contamination was limited essentially to the island of Oahu.

**Earlier health studies of the contamination**

Several investigators then attempted to assess whether adverse health outcomes were associated with the HE contamination. Three ecological studies, with exposure classification based on residence on Oahu during 1981-82, were undertaken to assess birth or perinatal outcomes. Two studies measured concentration of HE in human milk as an indicator of exposure. The designs of these studies are summarized in Table 1.

Burch examined trends in birth outcomes using vital records[21]. Birth, death, and fetal death certificates for 1968-1982 were examined for "fertility" and adverse birth outcomes. There was no significant change in any outcome in 1982 compared to previous years. LeMarchand et al reported the results of a temporal and geographical comparison of major congenital malformations based on hospital discharge data[22]. The investigators found that during 1970-1983, birth defects for Oahu were comparable to those for the United States, with the exception of cardiovascular malformation (CVM) and congenital hip dislocation (HD), which were significantly elevated. Because the rates of CVM and HD were elevated before 1981, the investigators concluded that the increased rates were not due to the heptachlor contamination. Grafton used medical charts to compare perinatal outcomes of births at Kapiolani Medical Center for Women and Children (KMCWC) and Tripler Army Medical Center (TAMC) during 1982 with those during 1978 and 1979[23]. There was no apparent change in birth weight, gestational age or sex ratio. An increase in jaundice during 1982 was found in some analyses, but it was not consistently significant.

The studies by Burch, LeMarchand et al and Grafton were all limited by a lack of assessment of individual exposure. Dietary studies have shown that only half of adults in Hawaii regularly drink milk[22]; thus, risk estimates based on general population rates or samples would be attenuated due to the inclusion of individuals not at risk, viz non-milk drinkers. The studies also did not evaluate the likelihood of secular trends in the outcome variables, which could have confounded the temporal comparisons. Finally, outcomes based on vital statistic reports and standard medical records may not be sufficiently sensitive to assess the effects of environmental exposures.

Siegel et al analyzed samples of human milk for HE[24]. The samples were provided primarily by donors to a breast milk bank. Figure 1 shows the HE levels found by the Siegel study compared to a survey by Takei et al in Hawaii during 1979-1980[25] and a national survey conducted by Savage et al during 1977-1983[26]. There was a significantly different distribution of high and detectable HE levels in breast milk samples after the exposure compared to earlier population samples in Hawaii, thus presenting the first evidence of increased HE levels in Hawaii's population. However, further interpretation of the study is limited since subjects were self-selected and not representative of the general population.

**Table 1**

INITIAL STUDIES OF HEPTACHLOR EPOXIDE EXPOSURE AND HEALTH OUTCOMES IN HAWAII

| Investigator | Source of Data | Exposure Indicator | Outcome Measure |
|---|---|---|---|
| Burch (21) | Birth, death, and fetal death certificates | Residence on Oahu during contamination | Rates of adverse birth outcomes |
| LeMarchand, et al (22) | Hospital discharge data | Residence on Oahu during contamination | Rates of major congenital malformations |
| Grafton (23) | Medical charts from Kapiolani and Tripler Medical Centers | Residence on Oahu during contamination | Birth outcomes, e.g., birth weight, gestational age, or jaundice |
| Siegel, et al (24) | Milk specimens provided by volunteers to a breast milk program | Milk levels of heptachlor epoxide | Birth weight of children |
| Hoffman (26) | Milk specimens of mothers and examination of children | Milk levels of heptachlor epoxide and length of breast feeding | Birth outcomes, physical growth and behavioral development through 36 months |

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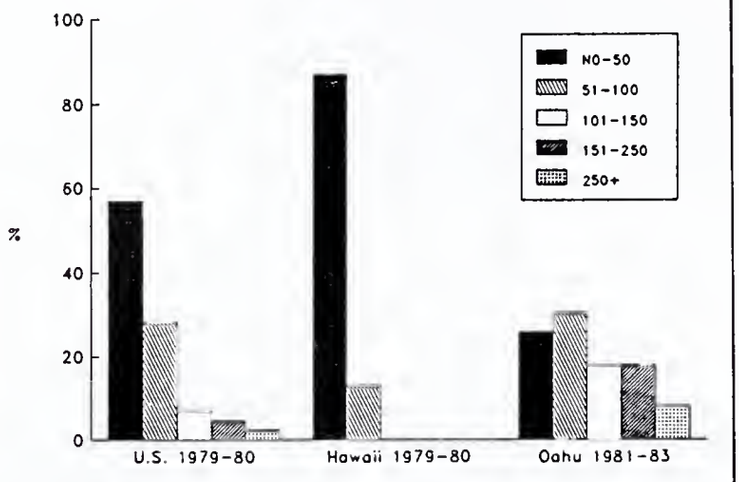



FIGURE 1 - Distributions of Heptachlor Epoxide Concentration in Breast Milk

Comparison of the distributions of heptachlor epoxide concentration in breast milk (ng/g, fat basis) found in a national survey during 1979-1980[26], in a survey in Hawaii during 1979-80 before the milk contamination episode[25], and in donors to a breast milk bank on Oahu after the milk contamination episode[24]. The last distribution is based on the first specimen provided by each subject.

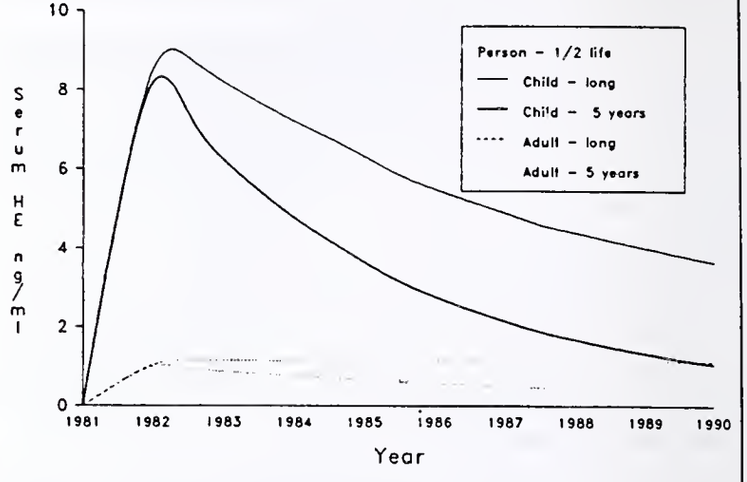



FIGURE 2 - Model of Heptachlor Epoxide Concentration in Serum

Toxicokinetic model of heptachlor epoxide concentration in the serum of an average milk-drinking adult and a child born in 1980. The model assumes that HE concentration in milk was 1.0 ug/g, fat basis, and that the contamination lasted one year. Hypothetical serum concentrations of HE are shown assuming that the half-life of HE is (a) very long or (b) five years.

One health study of children did present individual, although indirect, measures of HE exposure. Hoffman reported the results of a longitudinal evaluation of 120 infants born during 1982 potentially exposed to HE *in utero* and via breast milk[27]. Breast milk was provided by 69 mothers as a measure of exposure to the infants. The Mean HE level in breast milk was 0.123 ug/g, fat basis. Canonical correlation demonstrated a significant association between breast milk heptachlor epoxide level and infant low birth weight, gestational age, jaundice, and days in hospital after birth. Physical growth through 36 months was not associated with any exposure measure. HE level in breast milk was associated with slower acquisition of behaviors at 4 and 8 months; however, no similar detrimental effects were found at 18 and 36 months. In fact, at 18 and 36 months, duration of breastfeeding and behavioral development were positively associated. The availability of some exposure measures with longitudinal evaluation of health status and behavioral developments makes this study worthwhile, although flawed by small sample size and possibly a non-representative sample. In addition, the longer-term developmental test results were inconsistent with HE exposure and presumed continued toxicity, suggesting that the apparent detrimental effects at 4 and 8 months may not be attributable to HE exposure.

### Discussion of initial studies

Results of the initial investigations of the heptachlor contamination were inconclusive due to lack of reliable measures of heptachlor exposure, use of non-random sampling techniques, and assessment of non-specific health outcomes. The studies focused on transplacental passage and human milk consumption as the critical routes of exposure. In fact, EPA estimates of HE contamination in commercial milk (1.2 ug/g, fat basis) were an order of magnitude greater than the mean level in human breast milk reported by Siegel et al (0.11 ug/g, fat basis). None of the studies assessed dose or body concentrations of HE in a representative sample of the general population. Without such information, it is not possible to define the truly exposed population, nor to evaluate the potential effect of exposure on health outcomes.

A critical issue for future health studies or surveillance of the heptachlor contamination is whether the dose was sufficient to have resulted in a biologically meaningful increment in body concentration of heptachlor epoxide. EPA estimates suggest exposure in individuals who regularly consumed the contaminated milk was substantially above that usually found in milk; however, the estimated dose was still below the "no observable effect level" in 2-year, limited dog-feeding studies, upon which the action level was based[7,19]. Thus, health outcomes due to exposure are likely to be subtle (eg developmental delay among children), subclinical (eg alterations in immune system function), or occur after long latency (eg carcinogenesis). Epidemiologic evaluation of these health outcomes is methodologically difficult, if not impossible, without use of a biological indicator of past dose at an individual level. Since HE and related pesticides are likely to persist for long periods in human tissue, it may be feasible to estimate past doses based on current human milk, serum, or adipose concentrations[28]. Such determinations could serve as objective biological markers of past exposure.

### Study of body concentrations of heptachlor epoxide in Hawaii

In response to a request for proposals by the Hawaii Hep-

tachlor Research and Education Foundation[29], investigators from the Mount Sinai School of Medicine of New York in collaboration with investigators from the KMCWC and the DoH are conducting a survey to determine body concentrations of heptachlor epoxide and related pesticides in Hawaii's population. The major hypothesis is that current body concentration of HE is a reliable measure of past dose and can serve as an objective definition of exposure in Hawaii's population.

The study has two components. The first component is to determine whether concentrations of HE and related pesticides are elevated among 100 lactating women residing on Oahu compared to 50 women each on the islands of Maui and Hawaii and in the states of Arkansas and North Carolina. Women are systematically selected postpartum on the obstetric services of hospitals. They are asked to respond to a questionnaire concerning potential exposure to pesticides and to provide a specimen of breast milk to be analyzed for pesticide residues. Study hospitals include the KMCWC, Maui Memorial, Hilo County Hospital, Durham County Hospital in North Carolina, and University Hospital of the University of Arkansas for the Medical Sciences in Little Rock, Arkansas. The Analytical Laboratories of the Colorado State University will determine the levels of pesticides in the milk specimens.

The second study component is to assess concentrations of HE and related pesticides in the serum of 100 children 6 to 12 years of age residing on Oahu and 50 children each on the islands of Maui and Hawaii, and 100 adults 20 to 60 years of age on Oahu. Subjects are systematically selected from among participants in the Hawaii Health Surveillance Survey conducted by the DoH. Subjects are asked to respond to a questionnaire and to provide 7 mL of blood to be analyzed for pesticide residues. Pesticide levels will be analyzed at the Mount Sinai laboratories. Data collection for both study components began in March and continued through the Winter of 1990. Results should be available in 1991.

### Discussion of pesticide body concentration study

The study should be able to determine (1) whether body concentrations of heptachlor epoxide are significantly elevated in the population on Oahu; (2) whether any observed elevation is likely due to the milk contamination; and (3) whether it is feasible to conduct an epidemiologic study of the general population or to establish a surveillance program based on assessment of individual exposure.

The breast milk study component involves human milk because it is readily accessible and sampling is noninvasive. Arkansas and North Carolina were selected as Mainland comparison areas because pesticide use is generally highest in the southeast region of the country[26]. A significant elevation of heptachlor levels in subjects on Oahu compared to subjects from the aforementioned region would indicate the need for further medical evaluation and surveillance of the physical and intellectual development of infants who are breast fed subsequent to the interval of contamination. The result will also be able to address continuing concerns about the safety of breast feeding by mothers who consumed contaminated milk.

The human serum study component utilizes blood because it is most feasible to use serum concentrations to assess body concentrations of pesticides in the general population. Adipose tissue contains higher concentrations of lipophilic pesticides; however, obtaining adipose tissue specimens is more difficult and less acceptable by the subjects under study, and it has been determined that a reliable equilibrium ratio exists between adipose tissue and serum levels[30]. Current laboratory techniques can reliably measure HE in serum as low as 0.2 ng/mL[31]. It is unlikely that changes in serum levels below the current limit of detection would be associated with significant adverse health effects, although the possibility of some biological effects cannot be ruled out since health studies have not been done.

The sampling scheme for the serum study component has been designed to determine, first, whether the age-specific pattern of body concentrations is indicative of exposure to the contaminated milk; and second, whether serum concentrations in particular are elevated. We have performed pharmacokinetic modeling based on EPA data[17-19] which suggests that children currently 9 to 11 years of age should have the greatest elevation in body concentrations of HE due to the contamination of the milk supply in 1980-82 (see Figure 2). These children — 1 to 3 years of age at the time of the contamination — would have consumed relatively large amounts of cows milk. Younger children were not as likely to have been exposed to contaminated cows' milk, and adults would have lower levels based on their larger body mass and lower milk consumption on the average. Furthermore, levels in adults would reflect longer life time exposures which could obscure elevations due to the contamination of episode per se. Thus, the sample of adults is useful in providing an estimate of the range of body concentrations in the general population, and what proportion of the population has reliably detectable serum concentration of HE. For comparison, a study based on the second National Health and Nutrition Examination Survey found that only 2.5% of the United States adult population had HE serum levels above the 1 ng/mL detection limit in that survey[32]. The current study will be able to determine whether serum HE level is a reliable quantitative measure to distinguish between exposed and unexposed populations, a crucial element for designing future surveillance or conducting etiological research.

A recent survey by the DoH found that the most pervasive public health concern of Hawaii's population is chemical pollution "due to the contamination of food and water by pesticides and other man-made chemicals[33]". This concern has arisen in part because of episodes such as the aforementioned heptachlor contamination of milk on Oahu. Such episodes present a challenge to clinical and public health practitioners to understand and interpret the risk for their patients and the public at large. The current study of heptachlor epoxide and related pesticide levels in the general population of Hawaii would contribute to our understanding of potential risk due to pesticides in the environment.

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## YOHIMBINE HCl

**Description:** Yohimbine is a 3a-15a-20B-17a-hydroxy Yohimbine-16a-carboxylic acid methyl ester. The alkaloid is found in Rubaceae and related trees. Also in Rauwolfia Serpentina (L) Benth. Yohimbine is an indolalkylamine alkaloid with chemical similarity to reserpine. It is a crystalline powder, odorless. Each compressed tablet contains (1/12 gr.) 5.4 mg of Yohimbine Hydrochloride.

**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympathicolytic and mydriatric. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.[1,2] Also dizziness, headache, skin flushing reported when used orally.[1,3]

**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

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**HEPTACHLOR** *(Continued from page 111)*


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*(Continued on page 118)* ▶

# Electromagnetic Fields: Biological and Clinical Aspects

Frank L. Tabrah MD*
Stanley Batkin MD**

*Our entire biosphere is immersed in a sea of man-made electromagnetic fields (EMF). Occupational and public health data suggest that these fields may be a health hazard, possibly involving cancer and fetal loss. This paper reviews the history and pertinent physics of electromagnetic fields and presents evidence from the authors' work, and that of others, of biological interaction with living systems. Epidemiological data suggesting EMF hazards are reviewed including a discussion of possible risks associated with Hawaii's Lualualei transmitter site, TV and FM antennas in high-density population areas, fields surrounding electric power transmission and computer terminals, and the plan to route a major highway through the near-field of an operating Omega signal-source. In the face of current public fear and controversial research reports about long-term EMF exposure, suggestions are presented for public policy about these local sources of concern, as well as for the EMF risks common to any similarly developed areas.*

*"Knowledge is an island surrounded by a sea of mystery"*
*— Raymo*

Mystery, yes, and in our industrial world, a sea of electromagnetic fields. Do these fields matter? Are they a threat to health or longevity of individuals who are exposed to heavy doses and to entire populations who are lightly exposed? Simply stated, at some energy levels, yes, and at others, perhaps; there are more questions than answers, but the answers are fascinating.

Power lines, antenna fields, household appliances, computer terminals and microwave sources are all suspect in a burgeoning literature featuring numerous complaints and diseases, reproductive problems and cancer.

## History

In the first millennium BC curious Greeks noted that amber, rubbed with cat-fur attracted feathers and other light, small objects. At about the same time a shepherd named Magnus found that a certain rock attracted the nails in his shoes and the iron tip of his staff. These astute observers had discovered, separately, electrostatic and electromagnetic fields the nature of which today remains nearly as much a mystery as it did then.

In AD 1269, Maricourt, a French crusader, mapped out the magnetic field around a lodestone sphere, describing poles and lines of force. By 1663, many healers had exploited magnetism for imagined medical uses; to this day, hopeful believers wear magnetic rings, bracelets, or chains, and sleep on magnetic mattresses.

Although known in the middle ages, fields of static electricity have never elicited popular interest; however, it is becoming politically and environmentally a concern of power companies operating very high-voltage, direct-current, transmission lines.

Although Newton and Huygens in the 1600's developed a primitive understanding of electromagnetic waves in studying the physics of visible light, it was not until Helmholz, in 1894, predicted that the radio-waves discovered by Hertz in 1887 would be time-varying, electromagnetic fields, which, in expanding at the velocity of light, combine an electrical force (known as the E field) with a magnetic force (known as the H field) at right angles in a manner characteristic of the entire electromagnetic spectrum from gamma radiation through X-rays, light, microwaves, and the very "longest" radio-emanations (Fig. 1). To learn the full biological significance of

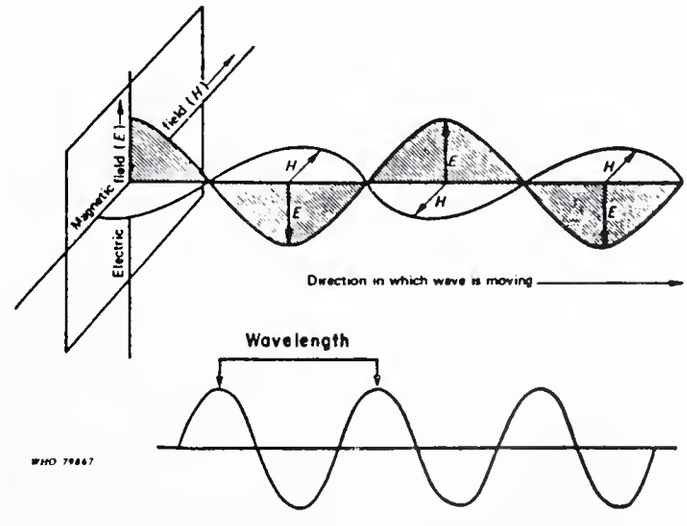



Fig. 1: An electromagnetic monochromatic wave. Electromagnetic waves consist of electrical and magnetic forces which move in consistent wave-like patterns at right angles to one another.

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* Emeritus Professor of Community Health: Research Associate
Department of Physiology, University of Hawaii School of Medicine
Associate Medical Director, Straub Clinic and Hospital, Inc.
** Professor of Neurosurgery
Department of Physiology, University of Hawaii School of Medicine

Reprint requests:
Frank L. Tabrah MD
Department of Physiology, T606
University of Hawaii School of Medicine
1960 East-West Road, Honolulu, Hawaii 96826

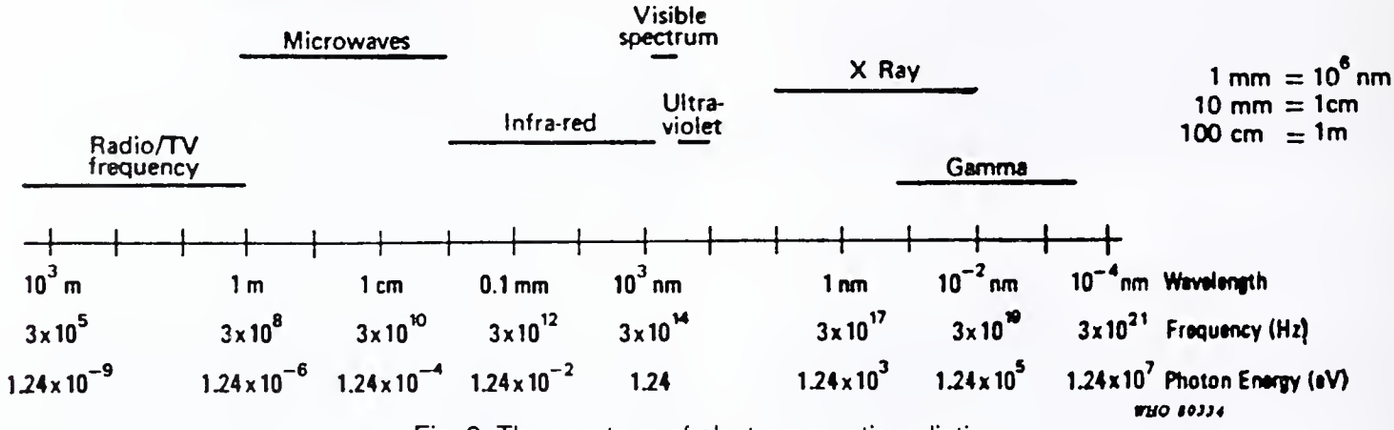



Fig. 2: The spectrum of electromagnetic radiation.

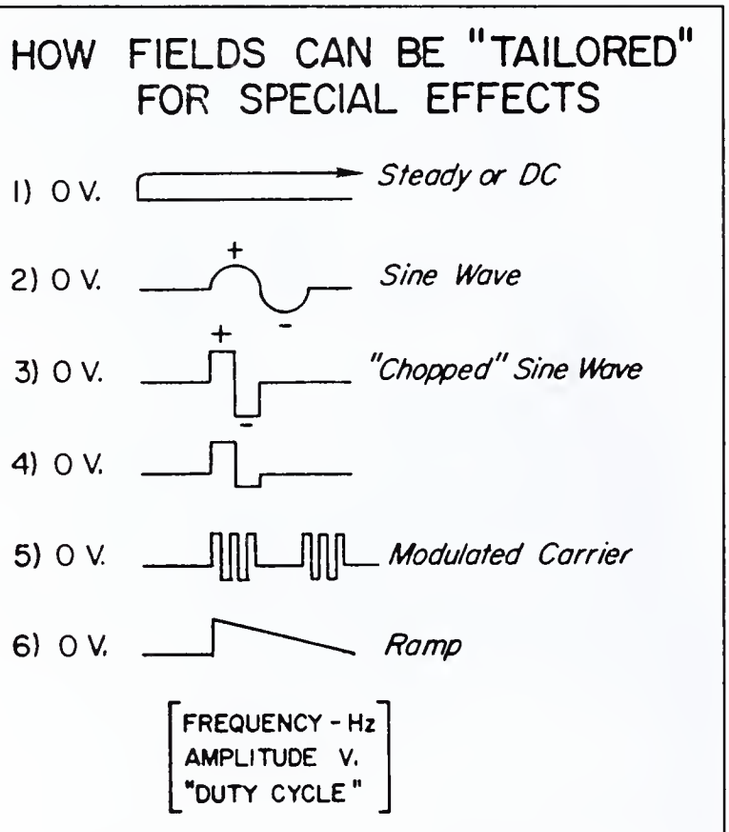



Fig. 3: Common varieties of electromagnetic wave forms.

exposure to these extremely low-frequency (ELF) fields is indeed urgent. How do these energy fields interact with living things, do they always, and how do we know?

### Some Physics

Electromagnetic output at all frequencies and wavelengths exhibits both wave-like and particle-stream behavior. The particles are known as photons, and the energy they carry varies tremendously with the oscillation frequency of their source (Fig. 2). Photons of the very high-frequency, ionizing, gamma rays are biologically highly destructive; those of ultraviolet light, are somewhat less so, and equally so are the wavelengths as we go down through the frequency range. We finally reach energy levels at which obvious biologic effects are primarily thermal.

Critical absorption relatonships exist between wavelength and size of the "illuminated" animal, person, organ, or in heating tissue. Absorption of energy is enormously affected by molecular size at high frequencies. Tissue-heating (Joule-heating) from intense exposure to microwaves cooks our foods, mostly by interaction with water and protein molecules. More gentle heating at the infrared level warms us in cold buildings.

Dosimetry standards and field-measurement techniques in assessing ionizing and Joule-heatng energy have been developed by radiation-physicists and users of microwave technology. Although allowable standards of exposure vary, it is axiomatic that the higher-energy portions of the electromagnetic spectrum can be injurious. American National Standards Institute (ANSI) exposure standards for FM and very-high-frequency (VHF) fields are still "voluntary," using 1982 levels of 1000 microwatts/sq. cm, or 0.4 watts/Kg, in the sense of being guidelines.

What of the remaining non-Joule-heating portion of the electromagnetic spectrum? Is it a threat? Are there unknown mechanisms that disturb our normal biologic functions, living as we do in a fog of photons of intermingled, time-varying, electromagnetic fields? Or could any of this part of the energy spectrum even be therapeutically useful? For years it has been thought that below Joule-heating energy-levels (frequency $>10^8$Hz), there could be no biologic affect. Occasional early reports questioned this dictum, but lacking proper controls and accurate field measurements, most of these data were unconvincing.

How are electrostatic and fields generated? How are they measured; and must they be avoided, except perhaps for therapeutic purposes?

Electrostatic fields do not change their strength or direction. ELF time-varying fields change field strength and/or polarity at an arbitrary rate of less than $10^8$Hz. Field-strength usually varies as the sine function (E or H sine-theta in cyclic systems) characteristic of our alternating-current power applications. However, for many specialized uses, field energy patterns may be "clipped," biased, or modulated by amplitude or frequency to produce complex wave-forms which have distinctly different biologic effects (Fig. 3). Specially "tailored" waves are commonly the output of experimental, navigational, or therapeutic medical equipment. In radio, antennas are designed to radiate electrical and magnetic energy equally; in

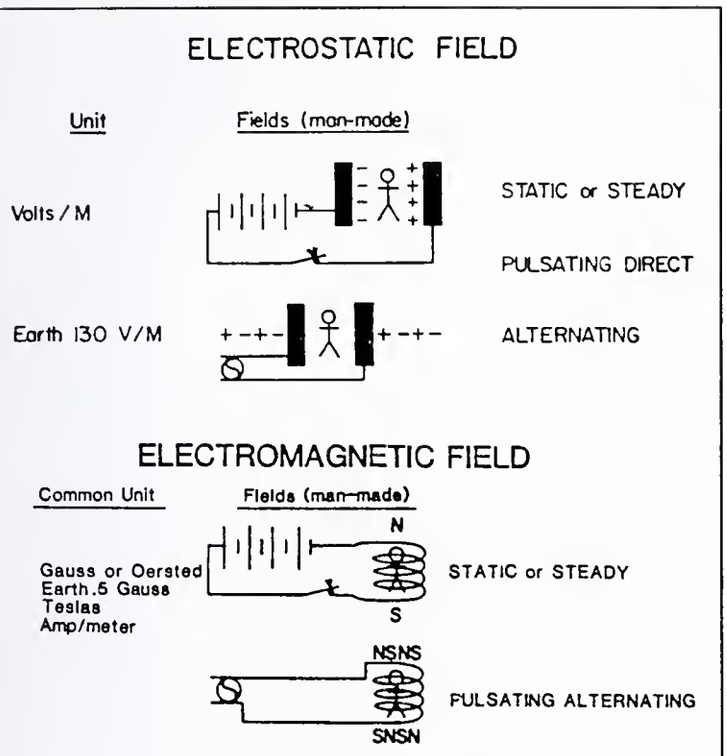



Fig. 4: Generation of electrostatic and electromagnetic fields, and common units of measurement.

experimental uses, the radiating elements are often designed primarily for electrical or magnetic field output, varying according to the use of parallel plates or coils (Fig. 4).

The power of the field is measured in watts/cm², the electrical field in volts/m, magnetic fields in amperes/m, or in Teslas, Oersteads, or Gauss (1 T=10⁴ G). In the measurement of fields, "near field" and "far field" considerations are important[1]. Complications arise in measuring field-strength when multiple sources are in close proximity, which may produce power overlaps, reinforcements, null-points or other field-discontinuities. Field-strength measring equipment has become sophisticated and relatively convenient. Small, wearable instruments measuring E or H fields are available (Fig. 5). Measurement of the E or H field alone will often permit calculation of the remaining field and the total power involved. Most epidemiologic studies have reported estimated or measured magnetic fields in milligauss, and exposure-site power-levels in milliwatts/cm². Many of these units are interchangeable; a most useful term is the specific absorption rate (SAR), which is related to the intensity of the induced internal electric field, and is the energy-absorption per unit mass of an exposed subject — usually expressed in watts/kg or milliwatts/g. The SAR of a body varies widely with changes in frequency or wavelength and is maximal at resonance-frequency[2].

### Some Biology

What do we really know about the effects of ELF electromagnetic-field exposure? Reports vary from no measurable effects to teratogenesis and the possible promotion of cancer. In exposure in the field, one must distinguish between interaction, sensation, effect and hazard[3]. It is wrong to dismiss the



Fig. 5: EMDEX portable field measuring instrument.

possibility of an ELF field-effect simply because quantum energy levels of photons at these frequencies are vanishingly small. Nearly all the energy absorbed by biosystems is by inductive and capacitative coupling, and sometimes by conduction. There is probably some interaction, although it may be only a small change in a dynamic system. "Effect" connotes a physiological perturbation, possibly measurable. "Sensation" is awareness of a physiological change. "Hazard" is less clear — it is essentially a value-judgement, based largely on one's statistical comfort-level. To some, any level of interaction would be deemed hazardous, and so it is with sensation and physiologic changes, although not even measurable change in systems-function is necessarily dangerous — hence the uncertainty surrounding electromagnetic field data, and the difficulty in interpretation of the results of research.

In our experiments in which we have exposed animals, cell cultures and human volunteers to specifically tailored EMF fields, we found distinct growth changes in Tetrahymena[4], and in transplanted neuroblastoma in mice[5]. We also noted reduction in $(Na^+K^+)$-ATPase activity in mouse-kidney cortex, diaphragm and in liver, as well as in transplanted cells of neuroblastoma[6].

Of clinical significance was the demonstration of localized bone density changes in osteoporotic-prone women exposed intermittently to pulsating magnetic fields for a period of 12 weeks[7]. Others have found field-induced changes in biologic function in bacteria[8], plants[9], animals[10], fish[11], and humans[12]. They have recently described modulation of gene-expression[13], alteration in transcription patterns in dipteran and human cells[14], and changes in protein synthesis in several animal species. Specific frequencies and wave-forms appear to have specific effects[15], and definite frequency- and field-intensity windows exist[16].

Understanding of these phenomena at the molecular level is meager, but theories of interaction include pertubation of transfer of ions through cell-wall and organelle-membranes, cyclotron resonance of certain ions, and reorientation with "pearl chaining" of large molecules within strong electromagnetic fields.

Epidemiologically, evidence of harmful ELF field-interaction is marginal. Suspicion of hazard dates back to the now well-popularized[17] work of Wertheimer and Leeper who, in

*(Continued)* ▶

1979, noted that Denver, Colorado children with cancer were 2 to 3 times more likely to have lived near high-current power lines in fields of 4 to 35 milligauss than were their controls[18]. Fulton et al in similar Rhode Island study[19] found no correlation between reported leukemia (the only cancer studied) and power-line configuration. The Electric Power Research Institute (EPRI) evaluated both studies and reported that the conclusions of each were unclear, but that there remained an unexplained correlation in the Dever data[20]. Milham, in 1982, first reported that men in 10 "electric" occupations (electricians, linemen, movie projectionists, streetcar motormen, and others) had excess death-rates from leukemia[21]. Similar work by others was combined with the Milham data by Savitz and Calle in 1987[22]. The results of these 11 studies showed a statistically significant 1.2 to 1.5 times relative risk for developing various leukemias. Telegraph, radio and radar operators, power and phone linemen and electrical engineers showed the most consistent positive results. Similarly, Coleman and Beral[23], reviewing recent work, conclude that electrical workers have an 18% increase in leukemia risk. In evaluating these reports, 3 points are critical — the ratio of reported cancer cases to expected cases is marginal; actual exposure-times and field-strengths are uncertain; and many possibly confounding factors have scarcely been addressed.

In our study, summaries of 14 recent formal statements about the risks of environmental ELF electromagnetic field exposure have been reviewed. Two of these we quote verbatim; 12 of the 14 are in agreement, whereas 2 draw no conclusions.

**American Institute of Biological Sciences[24]**

"ELF" electric and magnetic fields can, at least in some frequency and intensity combinations and under certain circumstances, cause a variety of effects at any of several levels of biological organization of plants and animals or in-vitro preparations. Additional research on coupling of living systems to ELF electric and magnetic fields, on mechanisms of interaction, and on responses of biological materials to such fields will be necessary to gain a more nearly complete understanding of the biological significance, if any, of interactions of these fields with living systems.

**World Health Organization[25]**

"In human exposure to time-varying (magnetic) fields, it seems reasonable to assume that a health-risk assessment can be made on the basis of significant perturbations of biological functions caused by electric currents induced by the fields. Available data suggest that, when current densities less than 10 milliamperes/m$^2$ are induced in tissues and extracellular fluids, the induction of adverse health-effects is unlikely. However, the possibility of some perturbing effects occurring following long-term exposure cannot be excluded.

**In Hawaii**

Fig. 6 presents some perspective of the question of the risk of electrical power systems in inducing childhood cancer by comparing this suspected risk with other common risks of modern life.

What of Hawaii's Lualualei antenna complex ( which has been declared innocuous, largely because of its relative isolation)[26], the plethora of transmitting radio and TV antennas in the heart of Honolulu[27] and the controversial highway H3, planned to pass directly over the ground plane of an operating Omega navigation transmitter? These pose questions in terms of health risks that are not easily answered. Each has its own unique answer involving arbitrary standards of safe exposure, differences in wavelength and wave-form. In the case of H3, provision for adequate shielding of the completed highway, proper grounding of equipment and conductive materials during construction, etc, pose more questions than there are answers.

Lualualei, unless one chooses to dispute the 1982 report, appears to demonstrate a quite sufficient distance separating the transmitters from the residents "outs.ide the fence" to insure safe operation under the regulations of ANSI, assuming the guidelines actually provide safe limits. New studies of the Lualualei energy output are now being done by the State and

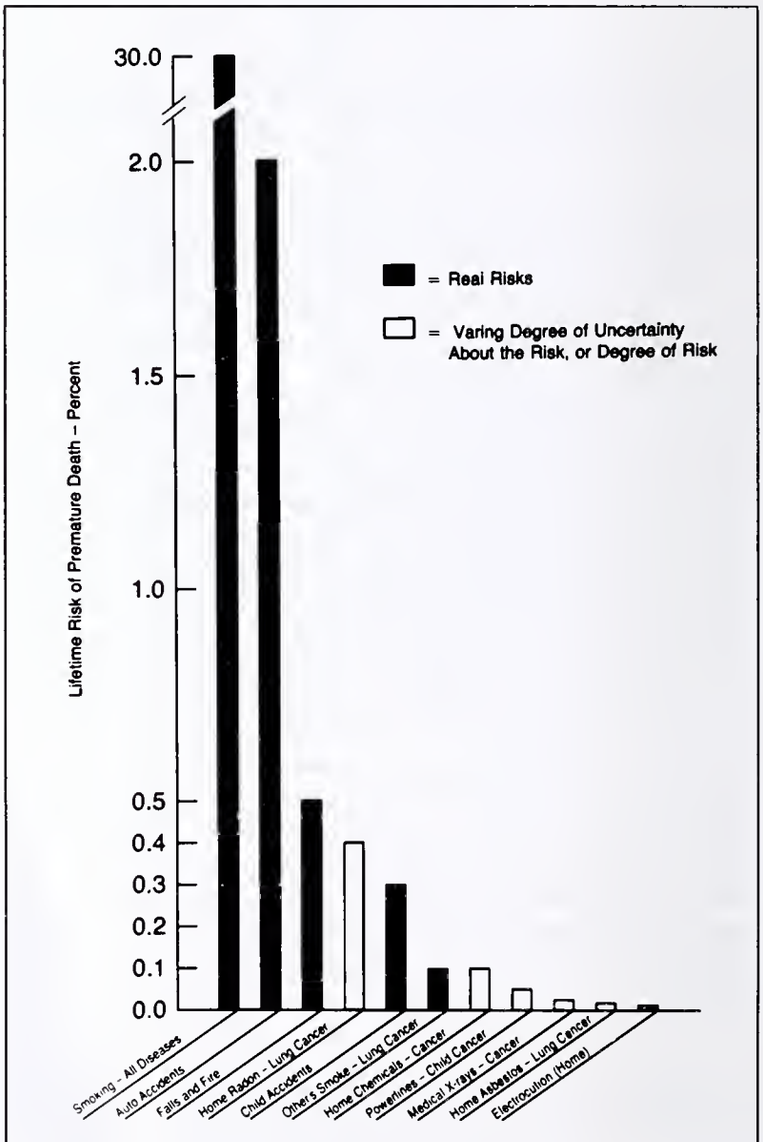



Fig. 6: Lifetime risks of premature death, measured and estimated. (Sources: Nero 1988, Wilson and Crouch, 1987, Ahlbom 1987), from Bonneville Power Adm.

appropriate consultants (1990).

On the other hand, an EPA survey (1984) of Honolulu's commercial radio and TV antennas stated that 2 out of 21 tested locations exceeded the generally accepted exposure-level standard (ANSI = 1000 microwatts/cm$^2$), but that the exposures would most likely be brief or intermittent, primarily affecting maintenance workers. This suggested that there was little risk to the general population. Again, questions have arisen about the validity of these measurements and of their significance in the absence of certainty about safe exposure limits.

Despite these concerns, a rational effort to avoid causing the public to panic over these 2 issues generated by the State's analysis of exposure should prevail until further research provides contrary data.

Similarly, much better information about the physiological effects of computer-terminal and power-system fields and exposure-levels must become available before dependable conclusions can be drawn about public health issues.

As for the Omega situation in Haiku Valley, building a highway through the near field of the large transmitter also poses an uncertain risk; although the probability may be small, possible, long-term, biologic ill-effects of its complex, modulated, electromagnetic output are simply not certain. They may well be insignificant, aside from simple shock resulting from the high-voltage gradient between the antenna span high overhead between the high mountain ridges that embrace the valley, and the ground. Major assumptions, on which the design of the highway is based, include protection of workers during construction and adequate shielding of the roadway for traffic. Both are represented by the designers of the highway to be feasible and safe and are addressed in their current plans. However, since consultants still disagree on the risks of routing through the antenna system, consideration should be given to relocation of the highway to a new path at least outside the transmitter's circular ground plane.

Large, well designed studies have been launched by the EPRI and agencies with which it has contracts; members of the Bioelectromagnetics Society and the Bioloelectrical Repair and Growth Society, university laboratories, and many foreign researchers are continually exploring the fundamentals of electromagnetic field interactions, as well as their epidemiology, if indeed such exists. Intense worldwide interest by the media and legislative bodies is erupting over EMF issues. While experts are differing over safe exposure levels and health effects, irrationality prevails. Unwarranted conclusions have begun to stifle the development of power systems, inviting poor legislation.

Today's uncertainty about allowable, safe levels of exposure to all sources of electromagnetic energy, with its reluctant possible cancer and fetal loss effects, suggests prudence in the design and placement of new power systems, broadcast facilities, office electronics, and commercial and home electrical equipment in order to best minimize EMF exposure.

One intriguing aspect of our daily total immersion in electromagnetic fields that are currently suspect, is the potential for litigation by persons who have real or imagined field-induced ill-effects therefrom. If some of these cases are won, be they with or without merit, questions of serious economic impact may well arise, affecting power, communications, building, manufacturing and the entire life styles of developed countries.

In today's milieu of uncertain data, public fear and possible economic threat to various electrical activities involving public exposure, several simple steps should be undertaken to meet the problems posed by the interface of current knowledge and political concern:

1. An interested and technically competent advisory group should be formed to assist the State DoH in evaluating EMF issues. These individuals should be encouraged to undertake whatever EMF related research is appropriate and feasible in Hawaii; supportive funding for this effort is essential. Means to establish such a group were begun in June 1990 by State Representative James T. Shon.

2. A State agency should be established and empowered to secure and maintain state-of-the-art field measuring equipment and personnel necessary for its use. Public perception of the credibility of presently available, field-strength data might be improved if confirmed and interpreted by independent investigators who are not owners or operators of EMF sources. Issues such as exposure risks at Lualualei and at Honolulu radio towers might in this way be better addressed by planners and the media.

3. New construction of power systems should be designed to avoid unnecessarily close proximity of electrical power lines and strong magnetic fields to highly populated areas, and public information should advise against prolonged use of computer terminals and the use of electric blankets by pregnant women until more dependable risk-data are available.

4. Most important by far, the many ills of our population such as cancer, the leukemias, reproductive morbidity, mental disease, even social disorder (now being linked to EMF by popular writings), must not be attributed to EMF unless there is absolute proof.

Today our understanding of the effects of ELF electromagnetic fields on biosystems is roughly comparable to what was known of microbiology by Leeuwenhoek in 1687. Within 5 to 10 years, after focused research, at least the core of today's uncertainties will probably be a matter of past history.

Since this article was submitted for publication, the EPA, Office of Research and Development, Washington, DC published a Review Draft which is not "at this stage to be construed to represent Agency policy." It is circulated for comment on its technical accuracy and policy implications, dated October, 1990.

The report is a summary of past and current research. In regard to epidemiologic studies, the report says, "These studies cannot be interpreted as evidence either for or against a causal association between cancer and EM-field exposures."

From the laboratory standpoint, the report continues, "In view of these laboratory studies, there is reason to believe that the findings of carcinogenicity in humans are biologically possible. However, the explanation of which biological processes are involved and the way in which these processes causally relate to each other and to the induction of malignant tumors is not understood."

EPA's final statement says, "This situation indicates the need to continue to evaluate the information from ongoing

*(Continued)* ▶

studies and to further evaluate the mechanisms of carcinogenic action and the characteristics of exposure that lead to these effects."

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# Maka O Ka Kauka

Russell T. Stodd, MD

**Human history becomes more and more a race between technology and catastrophe.**

In a policy statement, the American Academy of Ophthalmology has declared that only MDs or DOs should be allowed to perform laser surgery to correct myopia. The AAO has taken note that, like conventional corneal surgery, laser surgery can cause complications such as bleeding, edema, trauma and death of tissue. Obviously, the physician must be trained and prepared to provide local and systemic therapy to provide optimal management of such complicated events. The policy statement is directed toward the attempt of optometric institutions to obtain lasers for research and education.

**Nagging is the repetition of unpalatable truths.**

Awaken — while we spend so much time, copy and concern regarding the diagnosis, transmission, and therapy of HIV, be aware that syphilis increased 218% in New York state the past two years, and that congenital syphilis cases in Los Angeles County rose by 1400% between 1984-1988. But, so far, the laws regarding importation of animals have kept Lyme disease away from our door, while in New York state alone the number of confirmed cases increased seven-fold in four years with a total of 1,969 cases in 1989.

**Cataract PPO demo project marches on! Or, behind every great woman is a great behind.**

No matter that every medical organization involved has complained, no matter that influential Congresspersons like Fortney Stark have said it is a bad idea, and no matter what her family may think (many doctors, including husband), HCFA director Gail Wilensky is pushing ahead with the planned cataract PPO demonstration project. Congress refused to table the matter, and it remains perking on the Medicare stove. Everyone who has read the proposal recognizes that it is an obstreperous attempt to manipulate surgical patients into selected facilities with reduced Medicare reimbursement (you can make it up in volume!). Her disclaimers to the contrary, we can forget the doctor-patient relationship, and forget the quality issue, Gail Baby is out to save bucks.

**God works wonders now and then. Behold! A lawyer, an honest man.**

In Florida, the Bar Association has come up with a new set of rules regarding attorney television advertising — included are prohibitions against dramatic scenes, slogans, endorsements from clients, plugs from celebrities, moving pictures — in short, just about anything of greater interest than a test pattern. And the topper is that TV spots must carry a disclaimer warning that television advertising is not the way to select an attorney. Could such a thing happen in the medical world?

**In the fight between you and the world, back the world!**

While many doctors will suffer an earnings squeeze with budget FY 91, where state law allows, others will benefit. Specifically, nurse practitioners, clinical nurse specialists, certified nurse midwives and clinical psychologists were granted additional Medicare coverage starting in 1991. Donna Richardson of the American Nurses Association claims that the expanded coverage will encourage NPs to practice in rural areas. (Studies have shown that in states where nurses are allowed to practice medicine, they stay in urban and suburban areas.) Although it is difficult to demonstrate where patients are underserved in Hawaii, we can be certain that the matter will be addressed in the present legislative session. The argument is often made that para-medical people (NPs) will save Medicare $$, but statistics prove the opposite. Whenever the number of providers increases, expenditures rise, irrespective of their professional definitions.

**Behold! What light through yonder window breaks?**

By the fall of 1991, precertification

*(Continued)* ▼


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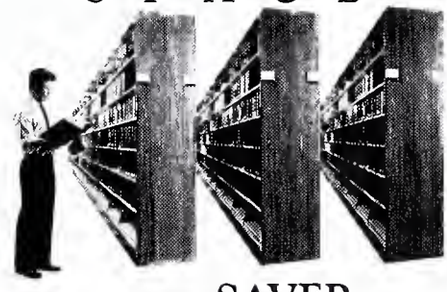
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## MAKA O KA KAUKA

*(Continued from page 119)*

for 10 procedures, including cataract, will no longer be required for Medicare patients. One swallow does not make a spring, nor one bit of insight a responsive Health Care Financing Administration. Yet one can almost take heart that some degree of recognition is creeping into the murky, spongy, quagmire of the bean-counting consciousness. So, we are told all these inane laborious phone calls with certification numbers and delays will be discontinued. The reason stated is that HCFA resources are being squeezed, and even dollars for bookkeeping are in shorter supply. One could hardly expect that anyone in a bureaucracy would admit that a requirement is stupid, wasteful and completely useless.

**If you're already in a hole, there's no use to continue digging, or are you up to par?**

Tired of PAR with Medicare? Frustrated with the manipulation (not that you could hope to escape it)? Any physician who is par as of January 1 and wishes to disenroll will be able to do so until February 15. Once the physician shifts to par or non-par, the decision is made for all of 1991. Consider these factors in a par/non-par decision:

1. Non-par doctors can balance bill up to 140% for "evaluation and management services" and 125% for all other services.
2. Non-par doctors now can learn the processing status of their Medicare patients' claims.
3. Prevailing charge screens are 5% higher for par-doctors.
4. Claims processing time for par physicians generally is several days shorter.
5. Patient demand for par-physicians is growing.
6. Non-par doctors now must submit all claims for Medicare patients.

**We must beware of needless innovations, especially when guided by logic.**

News from the NPDB (engrave those letters in your gyri — they will be with you FOREVER!). The National Practitioners Data Bank has now been in operation for 3-1/2 months and has

*(Continued on page 123)* ▶

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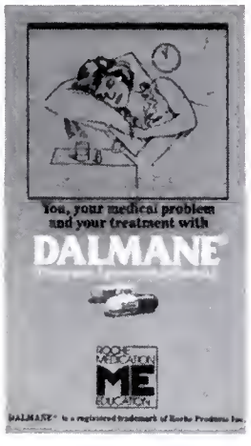


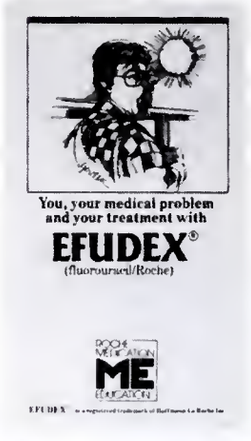
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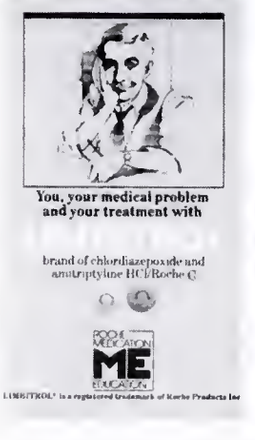






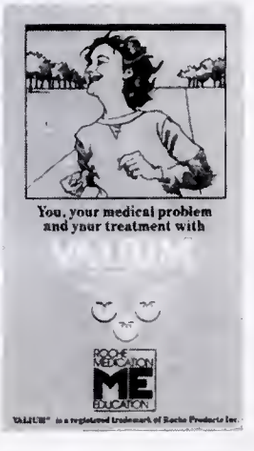








*(Continued from page 120)*

already received over 200,000 queries about doctors' quality of care track records, which comes out to about 15,000 requests/week! It is surmised that many hospitals want to get on record that they have checked their doctors' files. Bear in mind that any malpractice payments will be recorded, as well as reports of adverse outcomes. No doubt, before the year 2000, we will all find our way into the NPDB computer.

**If fortune turns against you, even jelly breaks your tooth.**

And on a similar subject, a consultant urologist in Missouri, boarded in three specialties, found himself listed in Ralph Nader's "Questionable doctor" compendium. (You need to know that self-appointed, consumer demigod Ralphie has published a book listing those doctors convicted of drug abuse, felonies, DEA violations, license suspensions, and other sins [Nader defined] too numerous and ugly to mention.) A local television station noticed the good doctor's name and called him to inquire about his tarnished background. The doctor was embarassed, shocked and totally ignorant of his "criminal" past. Investigation revealed that he also maintained a medical license in Kansas, and that one year he had failed to pay his annual license fee on time. Although he paid the fee and a penalty for tardiness, that was enough transgression to earn a niggling niche in the noxious, nattering Nader's nexus of nearly necrotic nebulous notes on ne'er-do-wells. Could the good doctor explain and get his name removed? Negative and nonnegotiable!

Don't forget annual HOS meeting February 18-20, 1991 at the Hyatt Regency Waikiki.

**Addenda—**

— Intranasal cocaine can lead to optic neuropathy and/or orbitopathy in association with chronic sinusitis.

— The idea is to die young as late as possible.

— Never lend your car to anyone to whom you have given birth.

Aloha, and keep the faith.

rts


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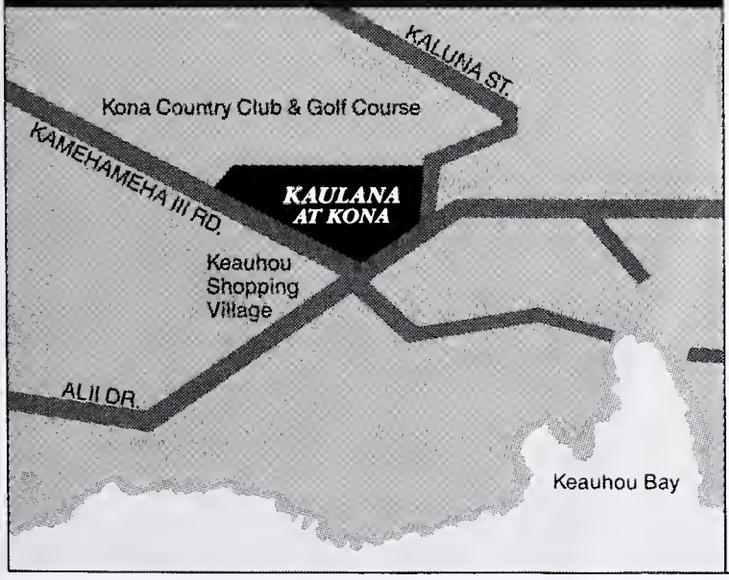
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# Communication and collaboration

In this issue of the *Journal,* we have 3 items that pertain to the matter of communication between colleagues.

The one is a short article by a lawyer whom some of us have met while doing work at HMA committees: she is Annette Regent and she writes a cogent piece about the importance of following the rules and regulations of the Workers' Compensation law insofar as the attending physician's role is concerned. A wide gamut of physicians treat people who become injured at work. Many of the problems connected with such injuries can be transposed over to No-fault auto insurance cases. In fact, the current legislative session has had that issue presented to it in an attempt to cover both types of injuries equally.

Of particular interest is the reference to the ethics of consultations. The law is quite specific: *"It should be noted that the medical fee schedule does not permit a consulting physician to make successive referrals to other consultants."* [italics ours/Ed]

The law and its rules speak to the preservation of the right, not only of the primary attending physician — the referring physician — who is required to continue control, but also of the payer. The employer, through his insurance carrier, is ultimately responsible for the compensation to the injured party. It is essential, therefore, for physicians to respect that source of payments. The way to do so is to exert a measure of control of services rendered.

The primary, attending, referring (PAR) physician is held liable, in order to assure the payer of benefits that funds are not squandered needlessly.

Although the PAR physician inevitably becomes the injured patient's advocate (the Workers' Comp bureaucratic maze is often horrendous), the physician must keep in mind his obligation to the employer as well, or at least to the latter's pocketbook.

Would that this rule could be applied to the matter of consultations throughout the rest of medical practice!

Medical ethics — the intraprofessional ethics — demand that this be practiced by us. It would benefit the patient tremendously — our primary concern, after all — and it might help to control the costs of medical care, thereby helping employers and insurance carriers as well.

The second item is a letter-to-the-editor by a staff psychiatrist under the State Department of Health (DoH) Mental Health Services Branch. She is Betsy Weiner MD MPH who works at the Diamond Head unit. She writes succinctly about the problems of communication between colleagues that are detrimental to our patients. These need our attention.

Third, and almost coincidentally (which makes it nice for an editor to be able to bring them together in one issue of the *Journal*), we have the temerity of publishing our own views of the ethical problems we practicing physicians have in communicating: Doctor to patient, doctor to doctor. In February this year, we were invited to expound on the subject at a Canadian-Hawaiian medical conference on Kauai titled, "Kauai Calls". This is the result of that effort.

There is a common thread in all this — a thread similar to a mountaineer's lifeline as he crosses a glacier face in the company of others; rules and regs ease the passage through life, or at least are intended to do so.

J. I. Frederick Reppun MD
Editor

# The complexities of statistical research

It is the *Journal's* policy to accept scientific and medicosocio-economic articles that pertain rather specifically to the practice of medicine in Hawaii — preferrably by local authors and about local matters of interest. However, every once in a while we are intrigued by something different that crosses our desk as a submission for publication, a new perspective or one that stimulates the professional mind and makes for cogitation and cerebration.

In this issue, we do have something of this kind: *Satisfaction with Physician Care* by Dr George Soh.

Consider if you please: a) The author is in Singapore (which is within the purview of the *Journal* in the center of the broad Pacific); b) he has four suffixes to his name and a doctorate; c) his article is based on research done in Los Angeles (which he claims is comparable to Honolulu); d) the extensive research project was funded by our federal National Cancer Institute (mirabile dictu!); and e) the subject matter should be of concern to the practicing physicians in our town. Please note also that the statistics start from "a regional health survey in the Los Angeles metropolitan area" with a figure of 20,000 "computer-readable addresses," which figure boils down to 2,020 household units, then 1,183 and finally 64% of 1,210.

We leave it up to the reader, of course, to evaluate the presentation. However, we wonder at the effort, time and dollars put into this kind of research, which only confirms what most of us already know: That the individual patient (known to bureaucrats as the "consumer" — of the health care fraction of

*(Continued on page 135)* ➤




# THERAPY THAT MAY BE AS SILENT AS HYPERTENSION ITSELF

VASOTEC is generally well tolerated and not characterized by certain undesirable effects associated with selected agents in other antihypertensive classes.

VASOTEC is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

A diminished antihypertensive effect toward the end of the dosing interval can occur in some patients.

For a Brief Summary of Prescribing Information, please see the last page of this advertisement.

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# VASOTEC®
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VASOTEC is available in 2.5-mg, 5-mg, 10-mg, and 20-mg tablet strengths.

**Contraindications:** VASOTEC® (Enalapril Maleate, MSD) is contraindicated in patients who are hypersensitive to this product and in patients with a history of angioedema related to previous treatment with an ACE inhibitor.

**Warnings:** ***Angioedema:*** Angioedema of the face, extremities, lips, tongue, glottis, and/or larynx has been reported in patients treated with ACE inhibitors, including VASOTEC. In such cases, VASOTEC should be promptly discontinued and appropriate therapy and monitoring should be provided until complete and sustained resolution of signs and symptoms has occurred. In instances where swelling has been confined to the face and lips, the condition has generally resolved without treatment, although antihistamines have been useful in relieving symptoms. Angioedema associated with laryngeal edema may be fatal. **Where there is involvement of the tongue, glottis, or larynx likely to cause airway obstruction, appropriate therapy, e.g., subcutaneous epinephrine solution 1:1000 (0.3 mL to 0.5 mL) and/or measures necessary to ensure a patent airway, should be promptly provided.** (See ADVERSE REACTIONS.)

*Hypotension:* Excessive hypotension is rare in uncomplicated hypertensive patients treated with VASOTEC alone. Patients with heart failure given VASOTEC commonly have some reduction in blood pressure, especially with the first dose, but discontinuation of therapy for continuing symptomatic hypotension usually is not necessary when dosing instructions are followed; caution should be observed when initiating therapy. (See DOSAGE AND ADMINISTRATION.) Patients at risk for excessive hypotension, sometimes associated with oliguria and/or progressive azotemia and rarely with acute renal failure and/or death, include those with the following conditions or characteristics: heart failure, hyponatremia, high-dose diuretic therapy, recent intensive diuresis or increase in diuretic dose, renal dialysis, or severe volume and/or salt depletion of any etiology. It may be advisable to eliminate the diuretic (except in patients with heart failure), reduce the diuretic dose, or increase salt intake cautiously before initiating therapy with VASOTEC in patients at risk for excessive hypotension who are able to tolerate such adjustments. (See PRECAUTIONS, *Drug Interactions* and ADVERSE REACTIONS.) In patients at risk for excessive hypotension, therapy should be started under very close medical supervision and such patients should be followed closely for the first two weeks of treatment and whenever the dose of enalapril and/or diuretic is increased. Similar considerations may apply to patients with ischemic heart disease or cardiovascular disease in whom an excessive fall in blood pressure could result in a myocardial infarction or cerebrovascular accident.

If excessive hypotension occurs, the patient should be placed in the supine position and, if necessary, receive an intravenous infusion of normal saline. A transient hypotensive response is not a contraindication to further doses of VASOTEC, which usually can be given without difficulty once the blood pressure has stabilized. If symptomatic hypotension develops, a dose reduction or discontinuation of VASOTEC or concomitant diuretic may be necessary.

*Neutropenia/Agranulocytosis:* Another ACE inhibitor, captopril, has been shown to cause agranulocytosis and bone marrow depression, rarely in uncomplicated patients but more frequently in patients with renal impairment, especially if they also have a collagen vascular disease. Available data from clinical trials of enalapril are insufficient to show that enalapril does not cause agranulocytosis at similar rates. Foreign marketing experience has revealed several cases of neutropenia or agranulocytosis in which a causal relationship to enalapril cannot be excluded. Periodic monitoring of white blood cell counts in patients with collagen vascular disease and renal disease should be considered.

*Fetal/Neonatal Morbidity and Mortality:* ACE inhibitors, including VASOTEC, can cause fetal and neonatal morbidity and mortality when administered to pregnant women.

Enalapril crosses the human placenta. When ACE inhibitors have been used during the second and third trimesters of pregnancy, there have been reports of hypotension, renal failure, skull hypoplasia, and/or death in the newborn. Oligohydramnios has also been reported, presumably representing decreased renal function in the fetus; limb contractures, craniofacial deformities, hypoplastic lung development and intrauterine growth retardation have been reported in association with oligohydramnios. Patients who do require ACE inhibitors during the second and third trimesters of pregnancy should be apprised of the potential hazards to the fetus, and frequent ultrasound examinations should be performed to look for oligohydramnios. If oligohydramnios is observed, VASOTEC should be discontinued unless it is considered life-saving for the mother.

Other potential risks to the fetus/neonate exposed to ACE inhibitors include: intrauterine growth retardation, prematurity, patent ductus arteriosus, fetal death has also been reported. It is not clear, however, whether these reported events are related to ACE inhibition or the underlying maternal disease. It is not known whether exposure limited to the first trimester can adversely affect fetal outcome.

Infants exposed *in utero* to ACE inhibitors should be closely observed for hypotension, oliguria, and hyperkalemia. If oliguria occurs, attention should be directed toward support of blood pressure and renal perfusion.

Enalapril has been removed from the neonatal circulation by peritoneal dialysis and theoretically may be removed by exchange transfusion, although there is no experience with the latter procedure.

There was no fetotoxicity or teratogenicity in rats treated with up to 200 mg/kg/day of enalapril (333 times the maximum human dose). Fetotoxicity, expressed as a decrease in average fetal weight, occurred in rats given 1200 mg/kg/day of enalapril, but did not occur when these animals were supplemented with saline. Enalapril was not teratogenic in rabbits. However, maternal and fetal toxicity occurred in some rabbits at doses of 1 mg/kg/day or more. Saline supplementation prevented the maternal and fetal toxicity seen at doses of 3 and 10 mg/kg/day but not at 30 mg/kg/day (50 times the maximum human dose).

If VASOTEC is used during pregnancy or if the patient becomes pregnant while taking VASOTEC, the patient should be apprised of the potential hazards to the fetus.

**Precautions:** *General: Impaired Renal Function:* As a consequence of inhibiting the renin-angiotensin-aldosterone system, changes in renal function may be anticipated in susceptible individuals. In patients with severe heart failure whose renal function may depend on the activity of the renin-angiotensin-aldosterone system, treatment with ACE inhibitors, including VASOTEC, may be associated with oliguria and/or progressive azotemia and rarely with acute renal failure and/or death.

In clinical studies in hypertensive patients with unilateral or bilateral renal artery stenosis, increases in blood urea nitrogen and serum creatinine were observed in 20% of patients. These increases were almost always reversible upon discontinuation of enalapril and/or diuretic therapy. In such patients, renal function should be monitored during the first few weeks of therapy.

Some patients with hypertension or heart failure with no apparent preexisting renal vascular disease have developed increases in blood urea and serum creatinine, usually minor and transient, especially when VASOTEC has been given concomitantly with a diuretic. This is more likely to occur in patients with preexisting renal impairment. Dosage reduction and/or discontinuation of the diuretic and/or VASOTEC may be required.

**Evaluation of patients with hypertension or heart failure should always include assessment of renal function.** (See DOSAGE AND ADMINISTRATION.)

*Hyperkalemia:* Elevated serum potassium (> 5.7 mEq/L) was observed in approximately 1% of hypertensive patients in clinical trials. In most cases these were isolated values which resolved despite continued therapy. Hyperkalemia was a cause of discontinuation of therapy in 0.28% of hypertensive patients. In clinical trials in heart failure, hyperkalemia was observed in 3.8% of patients, but was not a cause for discontinuation.

Risk factors for the development of hyperkalemia include renal insufficiency, diabetes mellitus, and the concomitant use of potassium-sparing diuretics, potassium supplements, and/or potassium-containing salt substitutes, which should be used cautiously, if at all, with VASOTEC. (See *Drug Interactions.*)

*Cough:* Cough has been reported with the use of ACE inhibitors. Characteristically, the cough is nonproductive, persistent and resolves after discontinuation of therapy. ACE inhibitor-induced cough should be considered as part of the differential diagnosis of cough.

*Surgery/Anesthesia:* In patients undergoing major surgery or during anesthesia with agents that produce hypotension, enalapril may block angiotensin II formation secondary to compensatory renin release. If hypotension occurs and is considered to be due to this mechanism, it can be corrected by volume expansion.

*Information for Patients: Angioedema:* Angioedema, including laryngeal edema, may occur especially following the first dose of enalapril. Patients should be so advised and told to report immediately any signs or symptoms suggesting angioedema (swelling of face, extremities, eyes, lips, tongue, difficulty in swallowing or breathing) and to take no more drug until they have consulted with the prescribing physician.

*Hypotension:* Patients should be cautioned to report lightheadedness, especially during the first few days of therapy. If actual syncope occurs, the patients should be told to discontinue the drug until they have consulted with the prescribing physician.

All patients should be cautioned that excessive perspiration and dehydration may lead to an excessive fall in blood pressure because of reduction in fluid volume. Other causes of volume depletion such as vomiting or diarrhea may also lead to a fall in blood pressure; patients should be advised to consult with the physician.

*Hyperkalemia:* Patients should be told not to use salt substitutes containing potassium without consulting their physician.

*Neutropenia:* Patients should be told to report promptly any indication of infection (e.g., sore throat, fever) which may be a sign of neutropenia.

NOTE: As with many other drugs, certain advice to patients being treated with enalapril is warranted. This information is intended to aid in the safe and effective use of this medication. It is not a disclosure of all possible adverse or intended effects.

*Drug Interactions: Hypotension—Patients on Diuretic Therapy:* Patients on diuretics and especially those in whom diuretic therapy was recently instituted may occasionally experience an excessive reduction of blood pressure after initiation of therapy with enalapril. The possibility of hypotensive effects with enalapril can be minimized by either discontinuing the diuretic or increasing the salt intake prior to initiation of treatment with enalapril. If it is necessary to continue the diuretic, provide close medical supervision after the initial dose for at least two hours and until blood pressure has stabilized for at least an additional hour. (See WARNINGS and DOSAGE AND ADMINISTRATION.)

*Agents Causing Renin Release:* The antihypertensive effect of VASOTEC® (Enalapril Maleate, MSD) is augmented by antihypertensive agents that cause renin release (e.g., diuretics).

*Other Cardiovascular Agents:* VASOTEC has been used concomitantly with beta-adrenergic-blocking agents, methyldopa, nitrates, calcium-blocking agents, hydralazine, prazosin, and digoxin without evidence of clinically significant adverse interactions.

*Agents Increasing Serum Potassium:* VASOTEC attenuates potassium loss caused by thiazide-type diuretics. Potassium-sparing diuretics (e.g., spironolactone, triamterene, or amiloride), potassium supplements, or potassium-containing salt substitutes may lead to significant increases in serum potassium. Therefore, if concomitant use of these agents is indicated because of demonstrated hypokalemia, they should be used with caution and with frequent monitoring of serum potassium. Potassium-sparing agents should generally not be used in patients with heart failure receiving VASOTEC.

*Lithium:* Lithium toxicity has been reported in patients receiving lithium concomitantly with drugs which cause elimination of sodium, including ACE inhibitors. A few cases of lithium toxicity have been reported in patients receiving concomitant VASOTEC and lithium and were reversible upon discontinuation of both drugs. It is recommended that serum lithium levels be monitored frequently if enalapril is administered concomitantly with lithium.

*Pregnancy: Pregnancy Category D:* See WARNINGS, *Fetal/Neonatal Morbidity and Mortality.*

*Nursing Mothers:* Enalapril and enalaprilat are detected in human milk in trace amounts. Caution should be exercised when VASOTEC is given to a nursing mother.

*Pediatric Use:* Safety and effectiveness in children have not been established.

**Adverse Reactions:** VASOTEC has been evaluated for safety in more than 10,000 patients, including over 1000 patients treated for one year or more. VASOTEC has been found to be generally well tolerated in controlled clinical trials involving 2987 patients.

*HYPERTENSION:* The most frequent clinical adverse experiences in controlled trials were: headache (5.2%), dizziness (4.3%), and fatigue (3%).

Other adverse experiences occurring in greater than 1% of patients treated with VASOTEC in controlled clinical trials were: diarrhea (1.4%), nausea (1.4%), rash (1.4%), cough (1.3%), orthostatic effects (1.2%), and asthenia (1.1%).

*HEART FAILURE:* The most frequent clinical adverse experiences in both controlled and uncontrolled trials were: dizziness (7.9%), hypotension (6.7%), orthostatic effects (2.2%), syncope (2.2%), cough (2.2%), chest pain (2.1%), and diarrhea (2.1%).

Other adverse experiences occurring in greater than 1% of patients treated with VASOTEC in both controlled and uncontrolled clinical trials were: fatigue (1.8%), headache (1.8%), abdominal pain (1.6%), asthenia (1.6%), orthostatic hypotension (1.6%), vertigo (1.6%), angina pectoris (1.5%), nausea (1.3%), vomiting (1.3%), bronchitis (1.3%), dyspnea (1.3%), urinary tract infection (1.3%), rash (1.3%), and myocardial infarction (1.2%).

Other serious clinical adverse experiences occurring since the drug was marketed or adverse experiences occurring in 0.5% to 1% of patients with hypertension or heart failure in clinical trials in order of decreasing severity within each category:

*Cardiovascular:* Cardiac arrest, myocardial infarction or cerebrovascular accident, possibly secondary to excessive hypotension in high-risk patients (see WARNINGS, *Hypotension*), pulmonary embolism and infarction, pulmonary edema; rhythm disturbances including atrial tachycardia and bradycardia, atrial fibrillation; palpitation.

*Digestive:* Ileus, pancreatitis, hepatitis (hepatocellular [proven on rechallenge] or cholestatic jaundice), melena, anorexia, dyspepsia, constipation, glossitis, stomatitis, dry mouth.

*Musculoskeletal:* Muscle cramps.

*Nervous/Psychiatric:* Depression, confusion, ataxia, somnolence, insomnia, nervousness, paresthesia.

*Respiratory:* Bronchospasm, rhinorrhea, sore throat and hoarseness, asthma, upper respiratory infection.

*Skin:* Exfoliative dermatitis, toxic epidermal necrolysis, Stevens-Johnson syndrome, herpes zoster, erythema multiforme, urticaria, pruritus, alopecia, flushing, diaphoresis.

*Special Senses:* Blurred vision, taste alteration, anosmia, tinnitus, conjunctivitis, dry eyes, tearing.

*Urogenital:* Renal failure, oliguria, renal dysfunction (see PRECAUTIONS and DOSAGE AND ADMINISTRATION), impotence.

A symptom complex has been reported which may include a positive ANA, an elevated erythrocyte sedimentation rate, arthralgia/arthritis, myalgia, fever, serositis, vasculitis, leukocytosis, eosinophilia, photosensitivity, rash, and other dermatologic manifestations.

*Angioedema:* Angioedema has been reported in patients receiving VASOTEC (0.2%). Angioedema associated with laryngeal edema may be fatal. If angioedema of the face, extremities, lips, tongue, glottis, and/or larynx occurs, treatment with VASOTEC should be discontinued and appropriate therapy instituted immediately. (See WARNINGS.)

*Hypotension:* In the hypertensive patients, hypotension occurred in 0.9% and syncope occurred in 0.5% of patients following the initial dose or during extended therapy. Hypotension or syncope was a cause for discontinuation of therapy in 0.1% of hypertensive patients. In heart failure patients, hypotension occurred in 6.7% and syncope occurred in 2.2% of patients. Hypotension or syncope was a cause for discontinuation of therapy in 1.9% of patients with heart failure. (See WARNINGS.)

*Fetal/Neonatal Morbidity and Mortality:* In infants exposed *in utero* to ACE inhibitors the following adverse experiences have been reported: Fetal and neonatal death, renal failure, hypoplastic lung development, hypotension, hyperkalemia, skull hypoplasia, limb contractures, craniofacial deformities, intrauterine growth retardation, prematurity and patent ductus arteriosus. (See WARNINGS, *Fetal/Neonatal Morbidity and Mortality.*)

*Clinical Laboratory Test Findings: Serum Electrolytes:* Hyperkalemia (see PRECAUTIONS), hyponatremia.

*Creatinine, Blood Urea Nitrogen:* In controlled clinical trials, minor increases in blood urea nitrogen and serum creatinine, reversible upon discontinuation of therapy, were observed in about 0.2% of patients with essential hypertension treated with VASOTEC alone. Increases are more likely to occur in patients receiving concomitant diuretics or in patients with renal artery stenosis. (See PRECAUTIONS.) In patients with heart failure who were also receiving diuretics with or without digitalis, increases in blood urea nitrogen or serum creatinine, usually reversible upon discontinuation of VASOTEC and/or other concomitant diuretic therapy, were observed in about 11% of patients. Increases in blood urea nitrogen or creatinine were a cause for discontinuation in 1.2% of patients.

*Hemoglobin and Hematocrit:* Small decreases in hemoglobin and hematocrit (mean decreases of approximately 0.3 g% and 1.0 vol%, respectively) occur frequently in either hypertension or heart failure patients treated with VASOTEC but are rarely of clinical importance unless another cause of anemia coexists. In clinical trials, less than 0.1% of patients discontinued therapy due to anemia.

*Other (Causal Relationship Unknown):* In marketing experience, rare cases of neutropenia, thrombocytopenia, and bone marrow depression have been reported. A few cases of hemolysis have been reported in patients with G6PD deficiency.

*Liver Function Tests:* Elevations of liver enzymes and/or serum bilirubin have occurred.

*For more detailed information, consult your MSD Representative or see Prescribing Information. Merck Sharp & Dohme, Division of Merck & Co., Inc., West Point, PA 19486* J9VS61R2(824)

MSD
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the GNP) desires most of all easy access to his or her physician, continuity of care by the same physician, and a good outcome at reasonable cost in each and every happening in a lifetime.

For the reader's edification, Dr Soh's suffixes stand for: BDS = Bachelor of Dental Surgery; MDS = Master of Dental Surgery (dentistry was his initial career); AM = Fellow of the Academy of Medicine in Singapore; he received his MPH from UCLA. "The study that provided the materials for the article was conducted while I was a post-doctoral fellow at UCLA," he says.

J.I. Frederick Reppun MD
Editor

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We take great pride in the quality of medical care in Hawaii. We are encouraged by the availability of health insurance and the accessibility of services. Then what could possibly intervene to deprive patients of this quality care?

In my role as consultant to many individuals, families and agencies in Hawaii, it has come to my attention that we cannot be complacent.

There are persons, young and old, who are not given the time and attention to follow-through that their condition warrants. An example would be those patients discharged from the hospital with no indication of diagnoses, prognoses or needed medications given to the caregivers at home. This leaves the family or other care providers in limbo with no guidelines for care.

Less apparent, but just as essential for good care, would be the patients who are unable to give a reliable report to the attending physician due to anxiety, denial or incapacity. In all such cases the information furnished by spouses or other family members needs to be gathered, accepted and considered with other pertinent data. Lack of this input from caregivers can lead to prolonged suffering, unnecessary hospitalization or premature death in many cases of serious injury or illness.

Family members and all caregivers often have essential facts on the health status of their loved ones. Even so, they need to have accurate information communicated to them by physicians and nurses. They need to be recognized as partners in the healing process.

Medical care is frequently a difficult task. By cooperating with all those who care for sick or impaired persons, we physicians can enhance our effectiveness and improve the potential for full health of our patients. We cannot do the job alone.

Betsy P. Weiner MD MPH
Staff Psychiatrist II DoH

* * *

In regard to your January, 1991 *Journal*, "News and Notes," compiled by Dr. Henry Yokoyama, I must take exception to one of the jokes included in the miscellaneous section.

I believe the joke, while it had elements of humor, contained material that was offensive to women particularly, not only those within the military service but all women. While there is nothing wrong with humor, when the humor comes at the expense of women who continually have to exert themselves against such "gender labelling," perhaps it is best rethought.

Needless to say, PMS is a serious disease and in itself is no joking matter, but I think it behooves physicians and our magazine which reflects our association to be sensitive to these issues and more importantly be leaders in assisting women to obtain quality and respect.

Duke Bainum MD
State Representative

***The Editor replies:***

To our respected colleague and State Representative, we wish to point out that humor and tragedy are mirror images of each other. We are certain that neither our inimitable Henry Yokoyama, nor his source, the humorist Bernie Fong, ever intended to affront women, unless perhaps they are henpecked men needing to vent their feelings in print.

This particular column, that is the favorite of and the most read by our readers, tries to be totally non-serious and healthful for those of us who deal so much with human tragedy.

We are certain that the women members of our troops who were in the Persian Gulf have had to take the brunt of jokes much more offensive than those of Bernie and Henry — and have taken them with good grace.

J. I. Frederick Reppun MD
Editor






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# Highlights of the HMA Council Meetings

## February

Those present were Council members John McDonnell, presiding, Stephen Wallach, Andrew Don, Calvin Kam, Russell Stodd, Fred Holschuh, Robert Laird, Richard Lee-Ching, H. H. Chun, Paul DeMare, Michael Dung, John Spangler, Henry Fong, Myron Shirasu, Ernest Bade, Richard Goodale, Denis Fu, Helen Percy, Theresa Smith, George Goto, James Lumeng, Walter W. Y. Chang, William Dang and Allan Kunimoto. Others present included Vernon Woo, Legal Counsel, J. I. Frederick Reppun, HMA Journal Editor and Steven Levine, Chairman of the Distinguished Medical Reporting Awards Banquet Planning Subcommittee of the Public Relations Committee (Wes Young, Chair). Guests included Edwin Gramlich MD (Hospital Consortium), Edward Margulies MD (DoH) and Harvey Hartenstein (Xelan). HMA staff: Jon Won, Becky Kendro, Nelson Jones, Jennie Asato, Jan Estioko, Pat Kawamoto, Lorraine Funai, Marilyn Lindsey, recording secretary and Lisa Tong of counsel.

Three physicians, nominated by their respective organizations to serve on the Cancer Commission were approved by the Council for 3-year terms: Reuben C. Guerrero MD, American Cancer Society - Hawaii Division, John H.C. Kim MD, State Department of Health and Robert Oishi MD, University of Hawaii.

The Council decided that the 1991 HMA Annual Meeting will be held at the Westin Kauai on October 11-13.

It acceded to the Public Relations Committee request to sponsor the next Distinguished Medical Reporting Awards event in 1991 at a banquet.

The Council supports the principle of privatization of county/state hospitals; however, the recent bill before the Legislature needs further review and clarification.

It supports the HIV-testing of a patient even without his or her informed consent when a health care worker has been exposed or injured; and it also supports, in principle, the initiation of an immediate judicial review if necessary in order to have the patient tested for the AIDS virus.

It advocates the establishment of parity in pay scales for all physicians, including psychiatrists, who are hired by the State and that they be exempt from Civil Service, except that it remains an option for those physicians who are presently employed.

The Council approved the recommendation of the Senior Physicians Committee that the State be asked to fund the primary care services for the homeless at Hale Ho'ola Hou of the Kalihi-Palama Clinic.

The Council supports SB 1825 which forbids mutual benefit societies in Hawaii from using their funds to operate any health care facility .

It referred to the Long Range Planning Committee for study and to report back on recent trends toward National Health Insurance Programs and the impact on the practice of medicine in the State of Hawaii .

The Council voted to sever HMA's relationship with the Medical Coalition for Tort Reform and to pay approximately one-third of the latter's outstanding debts up to a maximum of $500. HMA will not be liable for any additional debts of the Coalition.

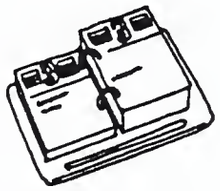
Andrew Don MD
Secretary

## March

Members present included: John T. McDonnell presiding, S. Wallach, A. Don, J. Chang, C. Kam, R. Stodd, F. Holschuh, C. Wong, R. Laird, R. Lee-Ching, H.H. Chun, P. DeMare, J. Spangler, H.K.W. Chinn, H. Fong, M. Shirasu, E. Bade, R. Goodale, D. Fu, H. Percy, T. Smith, A. Kunimoto, G. Goto, and W. Dang. Also present were: J. I. F. Reppun, Editor HMJ, Vernon Woo, HMA Legal Counsel, Maureen Lau, President HMA Auxiliary and guest Edith Don, National Representative for AMA-ERF; also HMA staff: J. Won, B. Kendro, N. Jones, L. Tong of counsel, J. Asato, P. Kawamoto, J. Estioko, and S. Conner, recording secretary.

- The Council reaffirmed support for the contention that health and medical services should be exempt from the State's general excise tax. It decided not to oppose a lottery bill if the proceeds would be used to cover lost revenues as a result of the general excise tax exemption.
- It opposed the No-Fault fee schedule bill because it offers no due process to physicians, among other items.
- It gave support to HR 148 of the U.S. Congress, the Ovarian Cancer Research Act of 1991, which supports basic research in developing tests capable of detecting ovarian cancer in early stages and to determine if there is a genetic basis for such a cancer.
- The Council approved the expenditure of up to $3,000 for legal consultation regarding a joint venture by HMA with an existing trust company for the benefit of HMA and its members.
- It also approved a budget of $3,000 to cover an initial get-together for young physicians as a way to recruit them as HMA members, thereby to develop future leadership in HMA. This would allow for the possible formation of a Young Physician Section within the HMA.
- It approved $1,000 as a contribution to the Play-It-Safe Program. Play-It-Safe coloring books and calendars are distributed free to school children.
- The Council granted $250 in support of the JABSOM yearbook.
- The Council was informed of HMA's legislative sponsorship of the radio program, "The Country Doctor," moderated by Marc Shlachter MD on KGU radio AM 76 which features a live, 5-minute, HMA legislative update broadcast to the public, as well as giving HMA an opportunity to inform the public about itself.
- It was announced to the Council that both the State Senate and House of Representatives would proclaim March 30 as *Doctors' Day in Hawaii.*
- The Council was informed that the HMA will again participate in judging and providing monetary awards for this year's Hawaii State Science and Engineering Fair.
- And it was informed that Syntex Laboratories has tentatively agreed to sponsor another "Prep for Practice" seminar, a highly successful program last year. It is to be held on October 9, 1991, with the target audience being medical residents.
- The Council approved the recommendation of the Internal Affairs Commission that HMA members be charged $100 registration fee at the annual meeting. This will include 2 tickets to the Presidential Inauguration Dinner, worth $90.
- Fred Holschuh MD, Vice-Speaker, reported on his attendance at a regional work group of the U.S. Department of Health and Human Services on Primary Care/Substance-Abuse Linkage Initiatives, which has as one of its goals the setting of national direction in this area.

Andrew Don MD
Secretary



# Continuing Medical Education

The Hawaii Medical Association does not review or evaluate the programs listed in the Hawaii Medical Journal Continuing Medical Education column and assumes no responsibility for educational value, scientific content, changes in agenda or cancellations.

## LOCAL ACCREDITED PROGRAMS
## ONGOING

For a complete list of ongoing programs, please refer to the March 1991 edition of the HAWAII MEDICAL JOURNAL. Further information is available through the individual institutions or through the HMA's CME Department.

## SPECIAL EVENTS

All special events should be confirmed with the CME program sponsors, as cancellations are not necessarily reported to the HAWAII MEDICAL JOURNAL.

### APRIL

4/3-4/6
**19th Annual Symposium on Vascular Surgery.** Contact: Society for Clinical Vascular Surgery, 508-526-8330. Location: Hyatt Regency Kauai.

4/3-4/6
**Common Problems in Obstetric Care.** Contact: Dr. Chervenak, 212-746-3058, Cornell University Medical College, 525 E 68th Street, New York, NY 10026. Location: Maui.

4/6-4/13
**Fourth Annual Primary Care Medicine: Update 1991.** Contact: Department of Medicine, 415-476-5208, University of California, San Francisco, School of Medicine, Department of Medicine, 521 Parnassus Ave., Room C-405, Box 0656, San Francisco, CA 94143-0656. Location: Kauai.

4/7-4/12
**The Shoulder 1991: The State of the Art.** Contact: American Academy of Orthopaedic Surgeons, 708-823-7186. Location: Intercontinental Hotel, Maui

4/9-4/13
**Pediatrics 1991.** Contact: American Academy of Pediatrics, 800-433-9016, ext. 7657. Location: Hyatt Regency Hotels Kauai and Maui.

4/15-4/19
**The Best Approach 1991: Effective, Efficient Strategies in Cardiology, Orthopedics, Gastroenterology and Pediatrics.** Contact: Group Health Cooperative Office of Medical Education, 206-326-3441. Location: Kauai Sheraton Hotel.

4/20 - 4/27
**Diagnostic and Therapeutic Skills in Internal Medicine.** Contact: B. Johnson, 213-2555, University of California School of Medicine, 1975 Zonal Ave., KAM 307, Los Angeles, CA 90033-9987. Location: Kamuela, Big Island of Hawaii.

4/28-5/01
**Internal Medicine Conference.** Contact: M. Amlin, 415-5594, Stanford University School of Medicine, Postgrad Medical Education Office, MSOB, #x365, Stanford, CA 94305. Location: Kamuela, Big Island of Hawaii.

4/28-5/1
**Management of the Surgical Patient.** Contact: M. Amlin, 415-723-5594, Stanford University School of Medicine, Postgrad Medical Education Office, MSOB, #X365, Stanford, CA 94305. Location: Kamuela, Big Island of Hawaii.

### MAY

5/4-5/5
**112th American Laryngology Association Scientific Sessions.** Contact: Dr. Neel, 507-284-2369. American Laryngological Association, Mayo Clinic, Department of Otolaryngology, 200 First St SW, Rochester, MN 55905. Location: Waikoloa, Big Island of Hawaii.

### JULY

7/9-7/13
**Present and Future Clinical Applications of Tumor Markers.** Contact: Dr. O'Neill, 402-280-1830, Creighton University School of Medicine, CME Division, California at 24th St., Omaha, NE 68178. Location: Kona, Big Island of Hawaii.

7/12-7/16
**American College of Physicians - University of Hawaii 11th Annual Update and Review of Internal Medicine.** Contact: John S. Melish, MD, Professor and Acting Chairman, UH Department of Medicine, 1356 Lusitana St., Honolulu, HI 96813, 808-548-2810. Location: Stouffer Wailea Beach Resort, Kihei, Maui.

7/31-8/3
**Ninth Annual Controversies in OB-GYN.** Contact: CME 213-595-3811, University of California, Irvine, College of Medicine, Office of CME, 200 S. Manchester, Suite 820, Orange, CA 92668. Location: Kamuela, Big Island of Hawaii.

### AUGUST

8/3-8/10
**Ophthalmology for the Practicing Physician.** Contact: B. Johnson, 213-342-2555, University of Southern California School of Medicine, 1975 Zonal Ave., KAM 307, Los Angeles, CA 90033-9987. Location: Kamuela, Big Island of Hawaii.

8/11-8/21
**34th Annual Postgraduate Refresher Course.** Contact: B. Johnson, 213-342-2555, University of Southern California School of Medicine, 1975 Zonal Ave, KAM 307, Los Angeles, CA 90033-9987. Location: Maui and Big Island of Hawaii.

8/16-8/20
**Hot Spots in Dermatology.** Contact: The Kauai Foundation for Continuing Education, PO Box 457, Kalaheo, Hawaii 96744, 808-332-7292. Location: Molokai.

8/23-8/25
**First Annual Kaiser Permanente Emergency Medicine Conferences: Advances in Emergency Medicine.** Co-sponsored by the Hawaii Medical Association. Contact: Nathan Fujimoto, MD, Kaiser Permanente Moanalua Medical Center, 3288 Moanalua Road, Honolulu, HI 96819, 808-834-9496. Location: Grand Hyatt Wailea, Maui.

# Compliance with Hawaii's Workers' Compensation Law

Annette Regent, Esq*

*The late United States Supreme Court Justice Brandeis once stated: "Don't assume that the interests of employer and employee are necessarily hostile — that what is good for one is necessarily bad for the other. The opposite is more apt to be the case. While they have different interests, they are likely to suffer or prosper together"[1].*

*Working toward resolving the employee's physical and/or emotional problems will confer a benefit on both employer and employee. It has become apparent to me that the issues of concurrent care, consultations and treatment plans are of great concern to physicians in Hawaii. I have therefore chosen to discuss these areas in light of recent Labor and Industrial Relations Appeals Board decisions.*

**Concurrent care**

As you know, during the course of medical treatment, the need for concurrent care by another physician often arises. In the event a consulting physician believes concurrent care for a patient is necessary, that physician must so notify the treating physician and the employer. I suggest that, at a minimum, a consulting physician write a thank-you letter to the referring physician indicating the need for concurrent care, though this in itself may not suffice.

The Workers' Compensation (WC) Medical Fee Schedule, Hawaii Administrative rules of the Department of Labor and Industrial Relations (DLIR), requires that "the attending physician obtain permission from the employer prior to initiating such a referral"[2]. In *Gomberg vs State*[3], the DLIR Appeals Board found that: "Employer's failure to respond in a timely fashion constituted approval of said request."

In this case, the employer had not complied with the requirements of the Medical Fee Schedule[4]. The employer's response "...was not submitted within 5 working days after the mailing of..." the doctor's request. It appears that an employer's timely response to a physician's request is required. Deferment of the decision by the employer will not necessarily relieve the employer from payment for the services requested and provided.

In *Gomberg*, there had been "...a reasonable effort to inform the employer of the need for claimant's readmission to the hospital..." and the exigency of the need for a consulting surgeon. The Board affirmed the Director's decision, stating: "...we find a reasonable effort on the part of the Doctor to keep the employer informed ... In the case before us, we do not believe denial of services, because of the health care provider's failure to strictly adhere to the rules, to be an equitable resolution in view of what reasonably can be considered critical circumstances and the fact that treatment was a medical necessity and undeniably related to the industrial injury."

Therefore, it appears that in cases of medical emergency a physician's good faith effort to inform the employer will be a strong determining factor for payment for the rendition of medical services not previously approved.

**Consultations**

It should be noted that the medical fee schedule does not permit a consulting physician to make successive referrals to other consultants. The referring physician should always state the reasons for requesting a consultation and should remind the consultant of the above rule. The consultant must ask the attending to do the further referral and to notify the employer as to why.

Payment for the consultation will generally be allowed if the employer does not object to that consultation within 5 working days. The consultation request should include the name, address, and specialty of the consulting physician.

In the case of *Malson vs State*[5], the Board acknowledged that consultatory referrals must comply with §12-13-34 and §12-13-35 of the Medical Fee Schedule, which require notification of the employer in non-emergency situations. The Board determined, however, that the emergency exception did apply in that case and the medical provider would have to be paid, although the referring physician in this case had not given notice to the employer.

The Appeals Board indicated that: "While there is some uncertainty as to the emergency aspect of the cardiac transplantation that was contemplated and the diagnostic tests that were consequently performed, we give claimant the benefit of the doubt, and consider the performance of such diagnostic testing in the instant case as an emergency, and the contemplated cardiac transplantation to be possibly emergency surgery. There is no evidence that there was no emergency."

Thus, the burden of proof appears to have been placed on

*(Continued)* ➤

Annette Regent
Attorney at Law
PO Box 2517
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**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympathicolytic and mydriatric. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.[1,2] Also dizziness, headache, skin flushing reported when used orally.[1,3]

**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

**References:**

1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
2. Goodman, Gilman — The Pharmacological basis of Therapeutics 6th ed., p. 176-188. McMillan December Rev. 1/85.
3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

Rev. 1/85




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the employer to show a lack of urgency in the course of treatment, in order that payment be withheld.

However, in *Anjo vs Hilo*[6], the employer was not obligated to pay for the employee's consultations at an out-of-state medical facility, although the claimant had suffered a compensable injury. The claimant had obtained neither the employer's nor the Director's approval prior to the consultation.

### Treatment plans

A treatment plan must address symptoms which are specific to a claimant's condition and should be documented in the medical record[7]. Doctors need to complete WC-2 reports in a timely fashion[8]. These reports must be filed within 7 days of the medical provider's rendering of initial treatment, and thereafter at intervals of no longer than 21 days in the event treatment is of a continuing nature. [Surely, this rule can be mitigated to "a reasonable" interval when the case drags on for months and years!/Ed]

A final report should be completed by the medical provider within 7 days of termination of treatment unless the injured patient fails to return. In the event these deadlines are not met, claims against the employer or the claimant most likely will not be honored unless the medical provider can satisfy the Disability Compensation Division (DCD) or the Appeals Board that strong mitigating circumstances existed. It is within the Director's discretion to fine a non-complying physician $250 if the treating physician cannot show justification for the delay.

Although an employer must pay for medical items prescribed to the injured party by the claimant's physician, an employer need not pay for any appearances by the treating physician at a legal proceeding because such are not considered to be therapy[10] [the physician's valuable time counts for naught?/Ed].

The Appeals Board's decisions demonstrate that in the event emergency treatment is indicated, the medical provider will be paid, although the provider had been unable to make a written request prior to rendering the necessary treatment. The decisions indicate that strict adherence to the rules and regulations are required. It should be noted, however, that it is possible for the rules to become relaxed in an emergency setting or if strong mitigating circumstances are shown.

REFERENCES

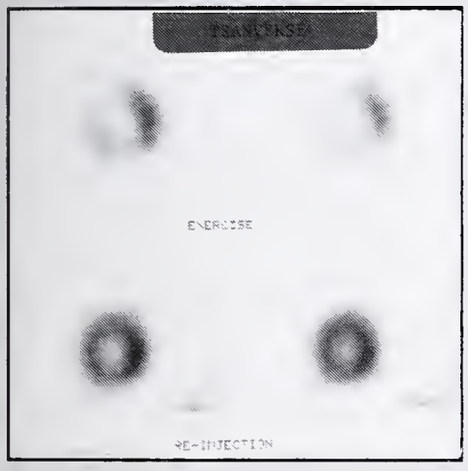

1. Goldman S. The Words of Justice Brandeis, Schuman, (1952).
2. §12-13-33(b), Hawaii Administrative Rules (Dept. of Labor and Industrial Relations).
3. *Gomberg vs State*, AB 89-3(H)(1990).
4. §12-13-33(d), Hawaii Administrative Rules (Dept. of Labor and Industrial Relations).
5. *Malson vs State*, AB 87-328(H)(1990).
6. *Anjo vs Hilo*, AB 88-611(H)(1990).
7. §386-96, Hawaii Revised Statutes.
8. *Nazara vs Keahou*, AB 87-334(WH)(1990).
9. §386-24, Hawaii Revised Statutes.
10. *Vehemente vs State*, AB 88-341. (1990).


■

# NUCLEAR MEDICINE TEACHING FILE

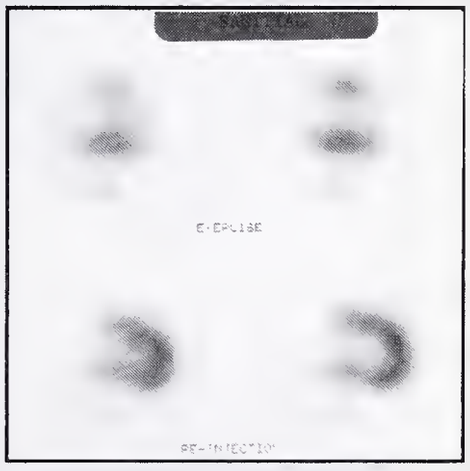
## IV PERSANTINE THALLIUM STRESS TESTING

**History**: The patient is a 66-year old Portuguese gentleman referred for evaluation of chest heaviness. He is scheduled to have total right knee replacement. He has a history of coronary artery disease, s/p angioplasty in 1988 for a left circumflex lesion.










**Scan Findings:** Extensive, reversible perfusion deficits are present in the antero-septal and apical myocardium.

**Catheterization Findings:** A high grade proximal LAD stenosis is present. The left circumflex artery is still patent with only a 30% obstruction.

**Conclusion:** IV Persantine is now available along with IV Adenosine. These agents are simpler to use when compared with oral Persantine as the problems with delayed and variable absorption are avoided and monitoring time is greatly reduced. Thallium myocardial imaging using pharmacologic stress have similar sensitivity and specificity for detecting coronary artery disease and may be used in those patients unable to exercise.

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AIR FORCE

# Doctor to patient, doctor to colleague: the ethics of medical practice

J. I. Frederick Reppun MD*

*We were invited to speak at a medical conference on Kauai: "Kauai Calls: People caring for people" held at the Kauai Hilton 21 to 25 February 1991. It was presented by the Society of General Practitioners, the British Columbia Medical Association and the BC Chapter of the College of Family Physicians, all of Canada, together with and by special invitation from the Department of CME of Wilcox Memorial Hospital and the Kauai County Medical Society. David Elpern MD and Paul Esaki MD, of Lihue and Kapaa respectively, were the local sparkplugs and organizers.*

The *New Patriot*, a Chicago publication edited by John Rossen, in its April 1990 issue had this to say in an editorial entitled, "Ethics and a Sense of National Purpose," and we quote:

> "The 1990s have been a decade of spiritual and moral crisis for our nation. Dominated by a national administration arguably the most corrupt and scandal-ridden in our history, our society has been transformed into a moral jungle, devoid of any sense of national purpose. Public and private deceit, graft and corruption have become endemic in the White House, in the two houses of Congress, in Wall Street and at every level of government, business and commerce.
>
> "Cynicism engulfs the nation, and fewer than 50% of eligible Americans bother to participate in the heart of the democratic process: The electoral system. The high democratic ideals of the American Revolution, which today are moving hundreds of millions of people around the world into political struggles for democracy, are trampled on, forgotten and neglected in our own country. Fifty percent of our high school students are unable to identify the text of the Declaration of Independence or the Bill of Rights."

Having quoted this provocative statement, and stirred up your endocrine juices, please allow me to get on to the subject at hand — ethics in general, and then, professional medical ethics.

Humanitarianism is the basis for ethics, which govern all interpersonal relationships. It is defined (in my Funk and Wagnalls dictionary) as "the doctrine, principles and practices of one who holds that man's duty is limited to right-doing toward others and has an interest in the public welfare." (Notably, this is in contrast to the word "humanism," which the dictionary defines as a system of thinking in which man, his interests and his development are made central and dominant; eg a humanist.)

As to professional ethics, the American Academy of Family Physicians (AAFP), in its *Ethical Principles in the Physician-Patient Relationship*, I think states it best, and I quote from it freely:

> "The fundamental physician-patient relationship is a voluntary, humanitarian association between two or more people who are joined by the desire to solve a health problem. The moral characteristics of this association are firmly based on humanitarianism.
>
> "The bond between doctor and patient normally comprises more than a formal contract can express.
>
> "The humanitarian impulse is the foundation of the 'exemplary professions' which include medicine, law, teaching and the clergy. These, and related professions, are distinguished from other occupations by their devotion to a moral code which sets humanitarianism above other considerations.
>
> "Not all people possess humanitarianism in equal degree. In some, its influence is compelling; in others slight. It can become subordinated to other desires or even extinguished. It conflicts with other natural drives, including the instincts to acquire property, to dominate others and to be autonomous. Humanitarianism causes people to set aside their natural tendencies to be suspicious and self-protective, to exploit weaknesses in others, and to withdraw from pain and suffering.
>
> "Some understandings of western democratic capitalism contain the abstract notion that 'the market' is the underlying mechanism enabling every function in society. In this extreme view, 'market forces' are necessary and sufficient to provide for all society's needs. Under this formulation, humanitarianism is merely an inciden-

*(Continued)* ➤

* General Practice
Editor, HMJ
45-461 Pua Inia Street, Kaneohe, Hawaii 96744

tal sentiment. It can be analyzed and exploited, but it is irrelevant to the process of governing an organization or a political entity.

"While it is possible to imagine physicians, lawyers, teachers and ministers under such a philosophy, this vision is morally handicapped. In order to serve honorably and effectively, the exemplary professions require a bond of trust between providers and recipients that is unobtainable in the absence of bona fide humanitarianism. A purely mercantile system can never encompass the motives these professions require to operate responsibly.

"Humanitarianism is necessary for the existence of a moral physician-patient relationship. The desire to help lies at the foundation of medicine. It does not merely sweeten it. At the same time, bilateral ethical obligations between the patient and his physician, that go beyond any technical, commercial or legal considerations that also operate, are created by the moral nature of the medical relationship."

**Professional ethics**

Professional ethics are designed to provide principles that represent goals to which physicians (in our case) should and can aspire in our treatment of patients. The corollary is also important: That patients deal honestly with their physicians, but we, as physicians under a moral code that should govern us, do not have the right nor the privilege to demand that our patients adhere to our code of ethics.

So — how does one deal best with the usual, customary and reasonable —

**PATIENT?**

The AMA has spelled out just 7 general principles. In the preamble, it states: "The medical profession has long subscribed to a body of ethical statements developed *primarily for the benefit of the patient.*" In none of these does it mention anything about the ethical conduct of the patient.

The AAFP, on the other hand, devotes a whole section to:

*"Truthfulness"*

in which it expounds at length on the obligations of the patient. With this I do not agree; it is unenforceable. I am certain that many of you have had experiences similar to mine, in which the patient comes close to doing himself harm by being afraid of doing something he considers to be unethical, such as not wanting to dissociate himself from a previous physician in whom he no longer has confidence. Patients are often afraid of compromising their own best interests by perhaps breaking an inviolate code of medical ethics, and say so.

The AAFP's initial statement, however, is a good one: *"The physician and the patient both owe each other the truth."* So is a following statement: "Physicians must make their patients partners in the medical thought process." In this day and age of widespread education of things medical via the sight and sound media, patients are much more critical — critical in the sense of being understanding and perceptive, able to reason carefully and seriously — despite our proclivity to use medical jargon, often inadvertently, that confuses the most intelligent of them. I am certain that most of you relish the intelligent patient who can follow the oftentimes devious and difficult algorithm of a complicated case.

On the contrary, we physicians are often too impatient with the smart aleck who challenges everything we say, or who quotes all the latest scare articles in newspapers and magazines, or the latest wild commercials that pervert the truth. Such patients, of course, challenge us to be extra careful and patient with the words we use and the meanings we convey.

We must remember, particularly, that the greater failure in communicating with the patient lies in our failing to ask the right questions, more even than in failing to listen perceptively.

The AAFP's *Ethical Principles* goes on at great length in this section; it is well worth your while to refer to them, and frequently.

However, I need to tell you that I have a particular, personal ethic when it comes to the subject of *Confidentiality and Documentation* in this same AAFP section. So does the AMA's *Current Opinions* by its Council on Ethical and Judicial Affairs go into great detail on the issue.

Some of us document extensively; others, very little. Sometimes I wonder that the hieroglyphics and the abbreviations penned on paper are meant to obfuscate colleagues, lawyers and patients alike! It has been said that if nothing is documented — ie it remains encapsulated only in the physician's noggin — confidentiality is preserved absolutely. However, the legal profession frowns on that concept and defense attorneys warn of dire consequences for the physician who has been sued for malpractice.

It is my contention that what a physician documents about his patient is absolutely inviolate and confidential and is — the physician's — personal property. It does not belong to the patient. It is an extension of the physician's thoughts, a memorandum to himself, his "paper brains" as it were. Lawyers, insurance people, the patient and others have the right to seek the necessary information from the physician, but it is up to the latter, after safeguards as to confidentiality, to divulge the necessary data as he sees fit and if it is appropriate, *unless the patient gives the physician carte blanche to do so and reveal everything in the patient's best interest.*

I cite you the case of our own Kauai colleague, who a year or so ago, was forced to release confidential data under the threat of imprisonment with consequent damage to his practice, his bread-winning, his family and himself. I think that was very wrong. I have often dreamed of ways to thwart that kind of tyranny; fortunately, I have never had an instance in my practice that required that, although I must admit that I have means of prevaricating when I document! Once again I say: We physicians should stand up for this basic right. It is an unwritten ethic that we should not have given up.

When you come right down to it, the physician's conscience should be his guide. However, the apprentice-physician needs to study the ethics of medicine as much as he must study the substance of the technique and the art. The foundation of it lies in *primum non nocere,* as it concerns the patient.

The ethics of how a physician should deal with his patient is much more complicated than this brief treatise intimates; I hope it whets your appetite to research it at greater length and to satisfy your interest in the subject. The extended lifetime of personal experience in the practice of medicine will teach you more than "book larnin'" will. Every patient of yours will teach you something new, provided that you are willing to learn. Physicians are physicians primarily because they are intensely interested and curious people and delight in probing into the innermost recesses of another human being. This cannot be done satisfactorily without a high degree of awareness of the vagaries of interpersonal relationships. This is not peculiar to the profession — life on this planet cannot proceed without such awareness and the response that is necessary to go along with that awareness — but it is particularly important in the case of the doctor-patient relationship.

That said, let us delve into the ethical relationship with a —

**COLLEAGUE.**

Again, the key word is proper *communication.*

The problems of relationships between physicians are legion; you will excuse me, I hope, if I limit my remarks to only some of them.

The one aspect in particular that I want to address is the matter of consultations. But before going into that topic, I need to present to you the AMA's Article II of its *Principles of Medical Ethics:* "A physician shall deal honestly with patients and colleagues ..." That phrase cannot be challenged; however, the rest of it bothers me as much as it must bother you, if not all. I repeat: "A physician shall deal honestly with the patients and colleagues" comma, "and strive to expose those physicians deficient in character or competence, or who engage in fraud or deception."

The one saving grace in the last phrase is the word strive — "*strive* to expose." It doesn't simply mandate "to expose," but to strive to do so.

Are we to be informers? Are we to emulate the pre-Perestroika Soviet Union? Ie the USSR under the KGB, in which every citizen had to keep his opinions, and even his thoughts, to himself, even in the presence of his close friends, for fear of being reported as a subversive?

On the other hand, it is our duty as an honorable profession and in our stated role as protectors of our patients, to maintain standards of professionalism and competence within our own ranks.

I think this poses a real conflict in ethical conduct. We have solved it in the peer review process by rules and regulations that govern conflict of interest, that are designed to eliminate the interjection of malice and that allow the accused due process. Ninety-nine percent of the time this process works well.

But, before it comes to that stage of proceedings, there is the interpersonal dilemma in which any one of you, or I, sense a failing in a colleague and are torn between our sympathy, our concern, and our duty. In such an instance, we must straighten up and remember that *the welfare of the patient comes first,* and let the chips fall where they may.

The simple answer perhaps — in considering this important issue all too briefly — is to gird up one's courage and approach the colleague directly and privately, and with friendly sincerity accost him with your concern. If his response meets you halfway, the road ahead might be smooth.

If, on the other hand, his response is to bristle and deny, a word to him that you feel you must quietly bring it up to a small, select committee of his peers, may alert him to the seriousness of the problem and bring him around.

In other words, a compassionate informer is far different from the malicious informer in the reference given above. Perhaps the AMA's Article II should substitute for the word "expose" a phrase along the lines of "strive to bring those physician colleagues ... into the intra-professional remedial effort and then allow that entity to proceed further to refer that recalcitrant colleague to the legal system if it becomes necessary."

As you all know, the profession is being accused of "honor amongst thieves" and "shielding the bad apples," whereas, in fact, we find it difficult in the extreme to cope with such miscreants when they call in the legal beagles to assist them in suing the peer reviewers on the grounds of malice, conflicts of interest, etc!

**Consultations**

I am in general practice, which is the old way of saying family practice. Most of you, I think, are certified in Family Practice. In watching the development of the certification process in Family Practice, I see it as combining the specialties of Internal Medicine and Pediatrics. In the United States of America, the premiums demanded in order to obtain insurance against malpractice have made the delivering of babies nearly impossible for FPs.

The same can be said about doing surgery, except that the main reason FPs are precluded from doing major surgery is because surgeons rightfully feel that the training required naturally leads to intensive specialization. An FP half-trained in surgery is not a surgeon — unless he establishes himself far out in an isolated community where the nearest board surgeon is miles away.

Anyway, I speak as an old generalist who, 52 years ago, did deliver babies, even by C-section and did major surgery, even by flashlight when the power failed on occasion; up until the plethora of highly competent specialists came into town.

In short, an FP is not a generalist. However, be that as it may, we have a common problem, which is that the patient of a primary care physician, when referred to a specialist is likely to be set adrift in the turbulent waters of organ-oriented medicine. It is the patient — the whole person — who becomes disoriented and confused when he finds himself in a maelstrom of strange faces, strange places, strange technology. The anchor of a personal physician is no longer holding the patient's boat steady. He signs informed consent papers when asked to. He is afraid not to. He is afraid, period. He latches onto one nurse at a time, hoping she will stay long enough on his case to be a reliability, a source of comfort and assurance that all will be well.

All this is our fault — we physicians. As a rationalization,

*(Continued)* ➤

we hide behind the screen of technocracy — to cover our okoles (as we say in Hawaiian). Is there an infection? Quick, call in the infection specialist. Is the CBC abnormal? Quick, call for an invasive bone marrow biopsy and a hematologist.

The specialist of today — nay, even the primary physician — is often too prone to order more tests, or to pass the poor patient on down the line to others, instead of having the patience to let nature take its course in the way of the body healing itself, in the way of giving it time to do so.

Much of this is generated by the public — by the patient or his family. However, that may be a reflection of the anxiety of those lay people affected and an indication that we physicians show too much indecision and anxiety ourselves; we have probably not established the foundation of trust needed in the doctor-patient relationship.

We need some guidelines — a dose of ethics — in the way we physicians deal with each other in caring for such a patient.

I say that we desperately need to establish a better system, an ethical one, in which the patient's personal physician, the old PMD — Personal Medical Doctor — be invited, encouraged and properly reimbursed for his personal service to and advocacy on behalf of the patient — to attend him all the way up the line. The specialist to whom the patient is referred by the PMD should never ethically refer the patient to any other physician without informing the PMD *and* obtaining his consent first (except in a dire emergency or except in the instance of the PMD being immediately unavailable).

It is our patient who needs this. I can recount tale after tale of cases in which the patient has actually been mistreated, inadvertently to be sure, by our present system wherein the specialist assumes total control by placing *your* patient on a conveyor belt to God knows where and unattended by you, his PMD.

It is the FP, in your case, who knows the patient best of all, who knows his family, his milieu, his work, his community as well as his temperament and his phobias. It is his FP — his PMD — who can succor him as he travels that conveyor belt to somewhere definitive (a side-benefit would be many less malpractice suits!).

As a horrible side issue of this same problem in good patient care, the patient referred to hospital-based physicians all too often is referred back to the PMD with nary a word, written or spoken, as to what happened in-hospital; the patient may call or visit his PMD unprepared. Mostly he doesn't bring his discharge meds, and all he can relate is "them thar pink pills make me sick." Hardly ever does he bring a sheet of paper upon which the nurse has written doctor's orders, sometimes in the way she would transcribe them from the hospital chart — in medicalese, totally unintelligible to a lay person. Most of the time that piece of paper is attached to the hospital bill, which the patient is afraid to scan for fear of precipitating a heart attack! He never brings the bill to have his PMD review its contents that are in Greek and Sanskrit, for veracity!

The hospital summary? Well, you might receive one if the consultant number one, not to speak of down the line consultant number 10, remembers that you were the original PMD and needed the summary for continuing care of that patient.

The patient would tend to gravitate back to his PMD in nearly all cases; but consultant number one or number 10 has probably given the patient an appointment to return to see the consultant, of whom the patient has a vague recollection and in whom the patient has an unsecured confidence.

In wartime in the military services, the patient's record accompanies the patient's body. Continuity of communication is established and maintained; is there any reason why we cannot do the same in civilian life?

The ethics of physician-to-physician demands it.

The 7 principles defined by the AMA can really be boiled down to an essential 3: (1) The ethical principles by which a physician deals with his patient; (2) how he interacts with his colleagues and (3) his obligations to his community, ie his social obligations to humankind.

I have touched on bits and pieces of the first two categories. I discussed a personal response to the third at the "Seaside Chats" yesterday afternoon: The physician's obligation to watch over the health of his community — including the larger community of the whole planet. This is indeed an "ethos" that he needs to adopt.

Ethos is derived from the Greek word meaning "character"; it is defined as:

(a) The standard of character set up by any race or nation;

(b) the study and philosophy of human conduct, with emphasis on the determination of right and wrong; and

(c) the basic principles of right action (as stated in Funk and Wagnalls).

This applies to all citizens of the world. However, the physician being as he is, educated and trained in the ways of man's body and mind, has a particular obligation — or ethical duty — to apply his intellect to the welfare and health of all humankind. ■

## INSCRUTABLE
## (Asian Eyelids)

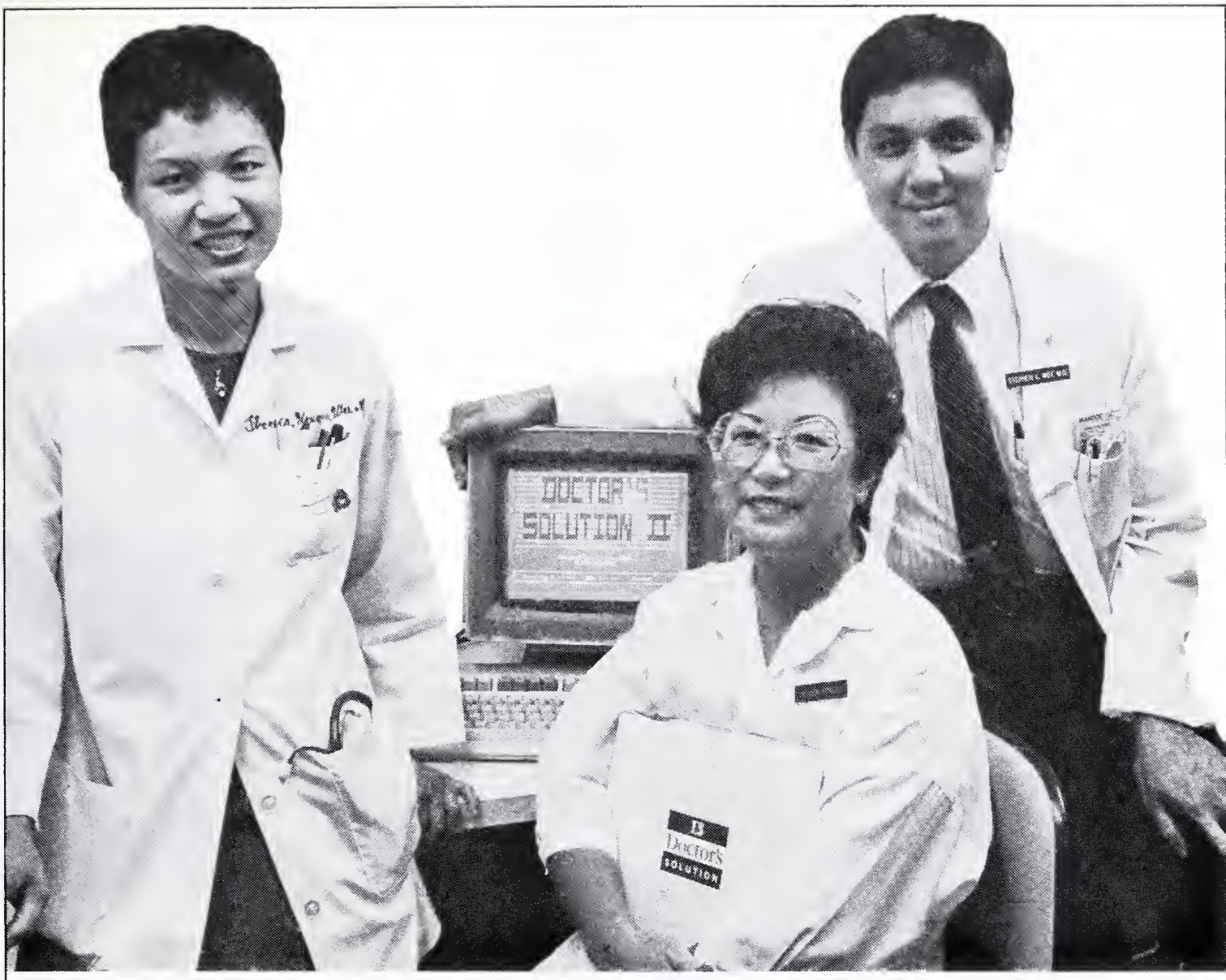
Gentle lines of subtle grace
Define the lids on the Asian face
Delicate enigma — feelings concealed
Imponderable windows, with shutters part sealed.

Guarded sweetness, softly veiled
With canopied corners that never have failed
To hint at mystery and whisper clues
Of ancient culture's considered sage views.

An elegant tilt in shy downward glance
Stirs in the viewer a window of chance
To penetrate through to a lid-shielded soul
Where poorly planned surgery would take a huge toll.

Lightly inquisitive, wrinkling the brow,
Inviting an entrance that lids scant allow.
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# Patient satisfaction with physician care**

G. Soh BDS MDS MPH AM*

*Patient satisfaction is known to be related to many desired outcomes in medical care. This study employs multidimensional scaling techniques to identify factors affecting satisfaction with physician care in 1,210 patients. Stepwise regression analysis of factors that met predetermined criteria showed that accessibility explained the greatest amount of variance in patient satisfaction. The patient's perceived efficacy of physician care and greater continuity of care also have significant correlations with satisfaction. Perceived susceptibility to illness, utilization of physician services, and levels of education have lesser but significant effects on patient satisfaction. Despite methodological constraints, economic and psychological benefits make evaluation of patient satisfaction an important exercise.*

## Introduction

Research indicates that individuals possess the ability to differentiate between various aspects and dimensions of the health care they receive[1]. As a result of the assessment, "satisfaction" represents an appraisal by patients of the extent to which their perceptions and expectations regarding their health care have been met[2,3]. Patient satisfaction manifests itself in many ways that include subsequent utilization of physician services as well as other overt health behavior[4]. For instance, researchers have found that reports of satisfaction correlated positively with patients' compliance with treatment instructions[5,6]. Levels of patient satisfaction can also affect other desired outcomes such as better provider-patient relationship, continuity of care, lower no-show rates, more efficient use of ancillary staff and greater staff satisfaction[7,8].

Generally, the content of patient satisfaction refers to an individual's assessment of health services received. In terms of such a broad conceptual framework, researchers have investigated different combinations of factors that can influence patient satisfaction. Such factors are, for the most part, attributed to characteristics of the provider and/or health care facility, such as providers' communication and interpersonal skills, quality and continuity of care, the physical facilities and other amenities, as well as courtesy extended by the staff and the interest shown toward patients. However, not all factors are dependent on, or interactive with, attributes of the provider or the health care facility. Perceptions by patients of other considerations related to their care-seeking behavior can also be translated into feelings of satisfaction or dissatisfaction with the care they receive.

Our study attempts to identify perceptions concerning medical care, and to examine the influence of such perceptions on the patient's satisfaction with visits to physicians' offices.

## Patients and methods

Data for this study are derived from a regional health survey in the Los Angeles metropolitan area.

The survey design incorporated a 3-stage, random probability, sampling technique[9]. Initially the frame contained approximately 20,000 computer-readable addresses sampled on an area-probability basis. In this sampling, a sophisticated computer procedure ensured that each housing unit had an equal probability of being selected. The first stage involved more than 1600 census tracts called primary sampling units (PSUs), representing the Los Angeles census area. Each PSU was then divided into blocks, and these blocks were then subjected to another sampling procedure. In the third stage, a systematic sampling scheme (with a random start) selected households within the selected blocks.

This multistage sampling procedure resulted in the selection of 2,020 household units. However, this was reduced to 1,883 units because of empty dwellings, etc. One adult individual (age 18 or older) was then randomly selected from each of the remaining household units, using the Kish selection table[10].

Of the 1,883 selected individuals, 1,210 (or 64.3 percent) eventually consented to a 1-hour interview. Of the remaining 36%, 18% refused to participate and 10 percent could not be reached after three consecutive attempts. Those who gave no response made up the remaining 8%.

At the initial face-to-face interview, demographic and

(Continued) ➤

* Senior Lecturer
National University Hospital
Lower Kent Ridge Road
Singapore 0511

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health data were recorded. The health data included health behavior, recent illnesses and disabilities, use of health services, preventive health behavior, as well as information on health insurance. Following these initial interviews, respondents were contacted by telephone every 6 weeks for approximately one year in order to continue the collection of information for this study.

Multidimensional scaling techniques were used to scale multi-item questions in order to identify factors that represent dimensions related to physician care. The use of multi-item questions produces a more homogeneous and reliable measure of a trait in question, as compared to using individual questions as the unit of analysis[11,12].

Questions that contributed to the formulation of factor content are presented in abridged form in Table 1. The dependent variable of patient satisfaction consists of 4 items, whereas the independent variables are made up of between 2 to 5 items each. Response to each question was registered on a Likert scale of "strongly agree", "agree", "disagree" and "strongly disagree", all of which corresponded to numerical scores of 4, 3, 2, and 1 respectively. In alleviating the phenomenon of subconscious acquiescence, items within each variable included both positively and negatively phrased questions.

Table 1. Multidimensional scaling of variables.

| Variables | Range of scores | Cronbach's alpha |
|---|---|---|
| **Patient satisfaction** | 4-16 | 0.7693 |
| Satisfied with medical care I received | | |
| Medical care I received could be better | | |
| Medical received is just about perfect | | |
| Doctors concerned about my feelings | | |
| **Accessibility** | 2-8 | 0.7963 |
| Often difficult to see doctor when I can go | | |
| Easy to see a doctor when I am able to go | | |
| **Patient's availability** | 2-8 | 0.6620 |
| Need special arrangements to get care | | |
| Usually free to go see a doctor | | |
| **Cost concern** | 2-8 | 0.7973 |
| Concerned about cost when seeing a doctor | | |
| Do not worry much about doctor's cost | | |
| **Perceived susceptibility** | 5-20 | 0.6562 |
| Seem to get sick more than others | | |
| I can avoid almost any illness | | |
| I resist illness better than others | | |
| Most people get sick more often than I | | |
| Cannot do much to keep from getting sick | | |
| **Motivation** | 5-20 | 0.7181 |
| I think about my health a lot | | |
| When I get sick, it concerns me a lot | | |
| When I am ill, I take it seriously | | |
| Health is the most important thing to me | | |
| I think about my health only occasionally | | |
| **Efficacy** | 3-12 | 0.6032 |
| If sick, I do not think doctor can do much | | |
| I can take care of illness as well as doctor | | |
| Doctor is good for most of my illness | | |

Each variable is derived from the listed items. Each of the items has a possible score of "1" to "4" on the Likert Scale. Those items that were not asked in affirmative expressions have their scores reflected. The expressions listed here may have been shortened to save space.

All independent variables were constructed using multidimensional scaling techniques except for continuity of care and physician visits. An index of continuity of care was constructed by assessing whether the respondent had a "regular person" and/or a "regular place" for medical care.

In scaling the variables, both dependent and independent, the zero-order correlations of the items that made up each scale were examined critically. Only those items that met the criteria of having a correlation coefficient (r) of > 0.2 at $p<0.01$ (one-tailed significance test) with every item in that scale were included. This strategy eliminated the number of uncorrelated or poorly correlated items. To ensure that no false correlations occurred as a result of misinterpretations of the coded responses, the scores for negatively phrased items were reflected. Once the items for each scale had been decided, reliability tests based on Cronbach's alpha were conducted. In order to ensure an adequate level of internal consistency of the resulting scales, the value of Cronbach's alpha had to be no less than 0.4 (see Table 1). Subsequently, principal component factor analysis was used to determine how the items clustered together. Factor analysis with oblique rotation produced a total of 7 distinct factors (see Table 2).

Selection of independent variables for regression analysis involved 2 stages. At the first stage, only variables having a correlation coefficient (r) of > 0.1 at $p<0.01$ with the dependent variable of patient satisfaction were considered for the regression procedure. After completing the stepwise regression procedure, any of the independent variables that did not produce a significant multiple correlation coefficient ($R^2$) change at $p<0.05$ were dropped when entering the final regression. This way, only variables illustrating a significant amount of variance in patient satisfaction were included in the final equation. In order to get conservative estimates of the variance, the reported $R^2$ was adjusted for the number of independent variables in the equation as well as for the number of cases.

## Results

The zero-order correlation analysis of items that made up each scale showed high reliability as indicated by the values of Cronbach's alpha (see Table 1). All items had significant correlation with every item in the scale. Principal component factor analysis of the items produced 7 distinct factors (see Table 2). Variables with similar factor content had comparable factor loadings.

The strongest predictor of satisfaction in the set of independent variables (including sociodemographic variables and physician visits) was determined to be access to care ($b=0.249$ at $p<0.001$) (see Table 3). Among the health belief factors, perceived efficacy of care showed a moderate relationship with satisfaction ($b=0.200$ at $p<0.001$). Another strong predic-

tor was continuity of care (b=0.182 at p<0.001). Perceived susceptibility to illness and utilization of physician services were lesser predictors of satisfaction. Among sociodemographic variables, only the level of education of the patient was significantly related to satisfaction. An interesting finding was the convergence of concern with cost with satisfaction. Factors introduced into the regression procedure but did not meet predetermined criteria included patients' availability and motivation to seek care, as well as other sociodemographic variables.

## Discussion

Previous studies of the effect of sociodemographic factors on patient satisfaction showed conflicting results[13-16]. However, level of education seemed to have the most consistent correlation with satisfaction[17]; this was confirmed in our study. A logical explanation would be that persons with more years of education understand the health care system better and can relate to it better.

Another group of factors that have had a consistent influence on satisfaction was the patients' perception of their vulnerability to illnesses and the benefits they perceived could be derived from care by physician. In our study, those who believed their physicians would do them some good felt more satisfied, and those who thought they were more susceptible to illnesses were more likely to be less satisfied with physician visits.

Accessibility usually means physical and financial accessibility to care, as well as physicians being available[16]. In our study we focused only on the availability of physicians and of

Table 2. Factor analysis of questionnaire items.*

| Items | Patient's satisfaction | Access to care | Patient's availability | Perceived susceptibility | Motivation to seek care | Perceived efficacy | Cost concern |
|---|---|---|---|---|---|---|---|
| Satisfied with medical care I received | 0.808 | | | | | | |
| Medical care I received could be better | 0.737 | | | | | | |
| Doctor's care is just about perfect | 0.798 | | | | | | |
| Doctors are concerned about my feelings | 0.767 | | | | | | |
| Often difficult to see doctors when I can go | | 0.763 | | | | | |
| Easy to see a doctor when I am able to | | 0.729 | | | | | |
| Have to make special arrangements to get care | | | 0.661 | | | | |
| Usually free to see or go to see a doctor | | | 0.719 | | | | |
| Seem to get sick more than others | | | | 0.684 | | | |
| I can avoid almost any illness | | | | 0.340 | | | |
| I resist illness better than others | | | | 0.840 | | | |
| Most people get sick more often than I | | | | 0.811 | | | |
| Cannot do much to keep getting sick | | | | 0.345 | | | |
| I think about my health a lot | | | | | 0.645 | | |
| When I get sick, it concerns me a lot | | | | | 0.747 | | |
| When I am ill, I take it seriously | | | | | 0.672 | | |
| Health is the most important thing to me | | | | | 0.741 | | |
| I think about my health only occasionally | | | | | 0.389 | | |
| If sick, I do not think doctor can do very much | | | | | | -0.721 | |
| I can take care of illness as well as doctor | | | | | | -0.696 | |
| Doctor is good for most of my illnesses | | | | | | -0.680 | |
| Concerned about costs when I see a doctor | | | | | | | 0.900 |
| Do not worry much about doctor's cost | | | | | | | 0.906 |

*Using iterative principal component factor analysis with oblique rotation.

*(Continued)* ➤

Table 3. Stepwise multiple regression on patient satisfaction.**

| Steps | Correlation with satisfaction | Standardized coefficient | Adjusted $R^2$ |
|---|---|---|---|
| Step 1 | | | |
| Accessibility | 0.363* | 0.249* | 0.130 |
| Step 2 | | | |
| Perceived efficacy | 0.298* | 0.200* | 0.176 |
| Step 3 | | | |
| Continuity of care | 0.265* | 0.182* | 0.210 |
| Step 4 | | | |
| Perceived susceptibility | -0.165* | -0.095* | 0.221 |
| Step 5 | | | |
| Physician visits | -0.099* | -0.083* | 0.230 |
| Step 6 | | | |
| Education | -0.039* | -0.089* | 0.232 |
| Step 7 | | | |
| Cost concern | 0.201* | 0.094* | 0.236 |

*Statistically significant at $p<0.05$
**Independent variables presented in the order of entry into the equation, which is based on the criterion of $p<0.05$.

the physical accessibility to a health care facility. Those patients who could get appointments to see their physicians whenever they needed to, and experienced less difficulty getting to physicians' offices reported greater satisfaction with physician care.

Continuity of care contributed a great deal to the degree of patient satisfaction by having a personal physician and a regular place for care. A simple explanation would be that familiarity with a regular source of care helped patients relate better to both provider and facility.

Studies also have shown that a reciprocal relationship exists between satisfaction and utilization[17]. The more satisfied people were with their physicians, the more frequently did they use their services; but only up to a certain point because the increase in frequency of contact resulted in a higher probability of unmet expectations and dissatisfaction[17]. Although the level of satisfaction resulted in increased utilization, the reverse was not found in our study.

There is no simple explanation as to why those patients who were more concerned with the cost of physician care reported greater satisfaction. However, those who enrolled in capitation plans expressed an appreciation of the lower cost.

## Conclusion

Presently, there is still no generally accepted conceptual framework for evaluating patient satisfaction. Current approaches serve only as general guidelines at best, rather than as empirical tools of analysis. Two common approaches involve either obtaining feedback from patients about various factors associated with medical care, or focusing on behavioral correlates of satisfaction. Our study is biased toward the former approach. Besides presenting serious challenges to validity and reliability in statistical testing, measures of global satisfaction have been criticized as being inadequate in representing patients' opinion, because the level of satisfaction varies with different aspects of medical care[18]. However, it would be unwise to allow a lack of perfection in methodology to make us indifferent to the factors that create more satisfaction on the part of our patients.

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# The family as victim in trauma

Vanessa Brown MA MSW*

*In trauma, the intense immediate need for medical intervention and stabilization has focused attention on the victim's physical injuries, and away from the traumatic psychosocial impact on his life and family. Trauma teams are prepared to respond quickly and efficiently to sudden life and death situations, with the most up-to-date knowledge, technology and care. Until recently however, little organized, comprehensive attention has been given to the psychosocial responses of the patient and the family. It is now time to prepare ourselves to offer this other important aspect of trauma care — the psychosocial component. As a part of this preparation, I would like to present the Family as Victim in Trauma.*

I know many of you know and do these things that I'm going to discuss with you, but I want to bring this idea of the Family as Victim in Trauma home to you.

The call can come at any time. You, the family member, are never prepared for it. It is sudden, unexpected and traumatic. A person you don't know has called to tell you that someone you love or care for has been injured and is at the hospital. You hang up the phone, your heart begins to pound, and your breathing is rapid. Your hands shake. You can't remember the name of the person who just called or what hospital it was or how to get there. Questions begin to flood your mind. "How bad is he? Is he conscious? Will he die? Will I get there in time? Whom should I call? What should I do?"

You are having a terrifying new experience and the old answers don't seem to apply. People speak to you but you have difficulty hearing or understanding them. Life as you perceived it moments before has changed, perhaps forever. The predictability of tomorrow is gone.

Even though you are not the patient, *you are* the victim of trauma. If it is your parent, your husband or your child who is injured, the whole structure and meaning of your daily life is threatened, and perhaps permanently altered. You are frightened that soon you might no longer be a daughter, or a wife or a mother. Nothing has prepared you for this moment. You feel afraid and alone. There is a compelling need to act. Although your goal is to get to your loved one, you have difficulty thinking what to do next.

Perhaps even worse, this news didn't come to you by phone. Perhaps you were there; you witnessed or were a part of the trauma event; you saw, heard and felt it. You saw the blood, the injuries, the mutilated or broken body of your loved one. You heard the cries of pain. You felt the impact of the crash or you watched helplessly the fall you could not stop. Perhaps you saw other victims: bloody, injured or dead. You experienced the panicky wait for help to arrive, saw the intense, bewildering and fast-paced actions of the first responders, rode the wailing ambulance or noisy helicopter, then saw strangers closing in on your loved one, and you were suddenly left alone. You had to give over the life and body of your loved one to others. At that point you can only hope and trust — and wait.

Speaking for us as caregivers, the first contact that is made with the family whether by phone or at the hospital is very important. It begins the process the family must go through in order to accept and adapt to the injury and its possible lifelong circumstances to the patient and to its members. At best, there will be a period of healing. But very possibly there will be an adjustment to permanent or long-term disabilities for both patient and family. It is best to establish early a healthy rapport with the patient's family.

The initial notification should be made by a person who will be available to the family for at least the next few hours. It should not be left up to a unit secretary or registrar.

As you prepare to make this call, remember that you are about to subject the person on the other end of the line to a sudden, traumatic disruption in his or her life. Even minor traumatic events are frightening to lay persons.

When you as caregiver have reached a family member, identify yourself clearly and slowly and where you are calling from. Give him or her whatever positive information you have. If the patient was able to tell you whom to call, begin with that.

"Hello, this is Vanessa Brown at Queen's Medical Center. Your son John has asked me to call you to let you know he has been in an accident and is in our emergency department."

This lets the family know that the patient is awake and able to speak and provide information, even as they learn about the injury. This is a very different picture than the one given when you call and say: "Hello, this is Queen's Emergency. Your son was hit by a car and brought in by Medivac."

You want to reduce the level of anxiety induced by your

*(Continued)* ➤

* The Queen's Medical Center
Honolulu, Hawaii 96813

Presented at the Hawaiian Islands Trauma Symposium, November 11, 1990, Lahaina, Maui.

call. Tell the truth but don't volunteer unnecessary, frightening information; there is plenty of time for details once the family arrives at the hospital. It is in everyone's best interest to keep family members functioning at the most rational level possible. Ask if the person will be driving or if there is someone who can provide transportation. Give directions; repeat your name and tell him or her that you will be the contact person.

Briefly answer what questions you can: "He is having x-rays; the doctors are with him now; we don't know the extent of his injuries, but he is awake and talking to us."

If the patient is critical, on the other hand, and the family asks, tell them so. If the patient has died, it is better for the physician to tell the responsible family member face to face after he or she has arrived at the emergency facility.

Family and friends who come to the hospital in response to the emergency do not know what to expect or what is expected of them. As far as the family is concerned, the injured patient is the only one in the emergency department or in the intensive care unit. Ringing phones, orders called out, equipment being moved about, are all interpreted by family members in relation to their loved one. Staff persons standing around who are chattering or laughing will give the appearance of being cold or indifferent. Keep in mind how things will look to frightened and worried family members. Whenever possible, move them to a quiet, private place, near enough for communication with staff, but away from all the usual hospital activity. Provide them with a phone and phone book for calling other family members.

Family members will have a tremendous need for information in order to make sense of what has happened. And yet, their ability to absorb and retain information may be diminished by their anxiety and fear.

We the caregivers work daily around ill and injured people. We see blood, pain and death. What is commonplace and meaningful to us is not so to patients and their families. They often cannot interpret what they see and hear. They must be informed and educated by us.

Family members will want to know if the patient is conscious, if he or she is in pain or going to die, or even about the mechanism of injury. Verbal information is not the only medium; the family also will want to see the patient as soon as possible. This will help them realize for themselves the patient's condition.

The patient benefits as well, physiologically[1] and psychologically, by seeing and hearing his family around him. Therefore, as soon as possible, allow the family member(s) in to see the patient. They may be able to reassure and support the patient in ways that medical personnel cannot. This visit with the patient is beneficial, rather than disruptive, and is to be encouraged and supported.

Prepare the family members before they go in for what they will see; tell them about what all the lines, tubes, and equipment that are attached are for; about the injuries that are obvious, and whether the patient can see or hear them. Briefly explain that the medical equipment is to help the patient. Properly prepared, most families handle the visit well. Seeing, touching and talking to the patient is reassuring.

The event becomes a reality with which to cope, rather than a nightmare, and the family can begin to move on to becoming allies in the treatment plan, rather than Victims of Trauma.

You, the "contact" caregiver, should keep the family abreast of what is occurring, what procedures are anticipated, when the patient will be moved, and what physicians may be involved. Present information in a calm and empathetic manner. Use lay terms; repeat as necessary and update. Become a liaison between the medical team and the family, carrying information both ways. Asking family members about past medical history and injuries, medications, allergies, and even about insurance coverage, when done at an appropriate time, increases the family's sense of participation and decreases their feelings of helplessness and separateness.

Patients and families bring all levels of coping skills and personal or cultural responses to the hospital with them. Some may express denial; some may weep loudly or act-out angrily. Some will be calmed readily and be able to take on the task of helping other family members. Some may require repeated intervention. Angry feelings and thoughts are often expressed as a part of responding to the traumatic event. Such angry words should be accepted but not taken personally by health personnel, although such behavior on the part of a family member may need to be assuaged and controlled so that no one is harmed.

Family members may blame themselves and each other, saying: "If only I had stayed home today," or "I told you not to let him buy a motorcycle." These thoughts and ideas are better expressed and discussed then and there. However, do not rush in too quickly to reassure and fix their ideas for them.

It is important that the health care worker assisting the family provide initial support, guidance and structure to its members. It is equally important to identify the family member or members who will be able to take on a supportive or leadership role within the family and to reinforce their strengths and skills. Gradually, the contact person must phase out and begin to hand over tasks and responsibilities to family members. Decreasing family dependence on the health care worker and institution enhances the restructuring and healing of the traumatized family.

Eventually the family will need to function independently in order to cope with the aftermath of the trauma and what may be a long struggle to adapt and redefine life purpose for both the patient and themselves.

It is essential to good trauma care to bring the family from being "Victims of Trauma," to becoming a part of the healing and rehabilitation process. This transformation should begin with the very first contact in order to make it as good as it can be.

REFERENCE

1. Kleeman KM. Family Systems Adaptation in Trauma Nursing, From Resuscitation Through Rehabilitation. W.B. Saunders, 1988, Philadelphia.

■

# I Miss My Mind

I'm not used to my arthritis,
With my hearing, I'm resigned.
I can manage my bifocals,
But, oh Lord, I miss my mind!

Sometimes I can't remember
When I stand upon the stairs,
If I'm going up for something
Or I've just come down from there.

And often at the Frigidaire
My mind is filled with doubt;
Have I been putting food away
Or come to take some out?

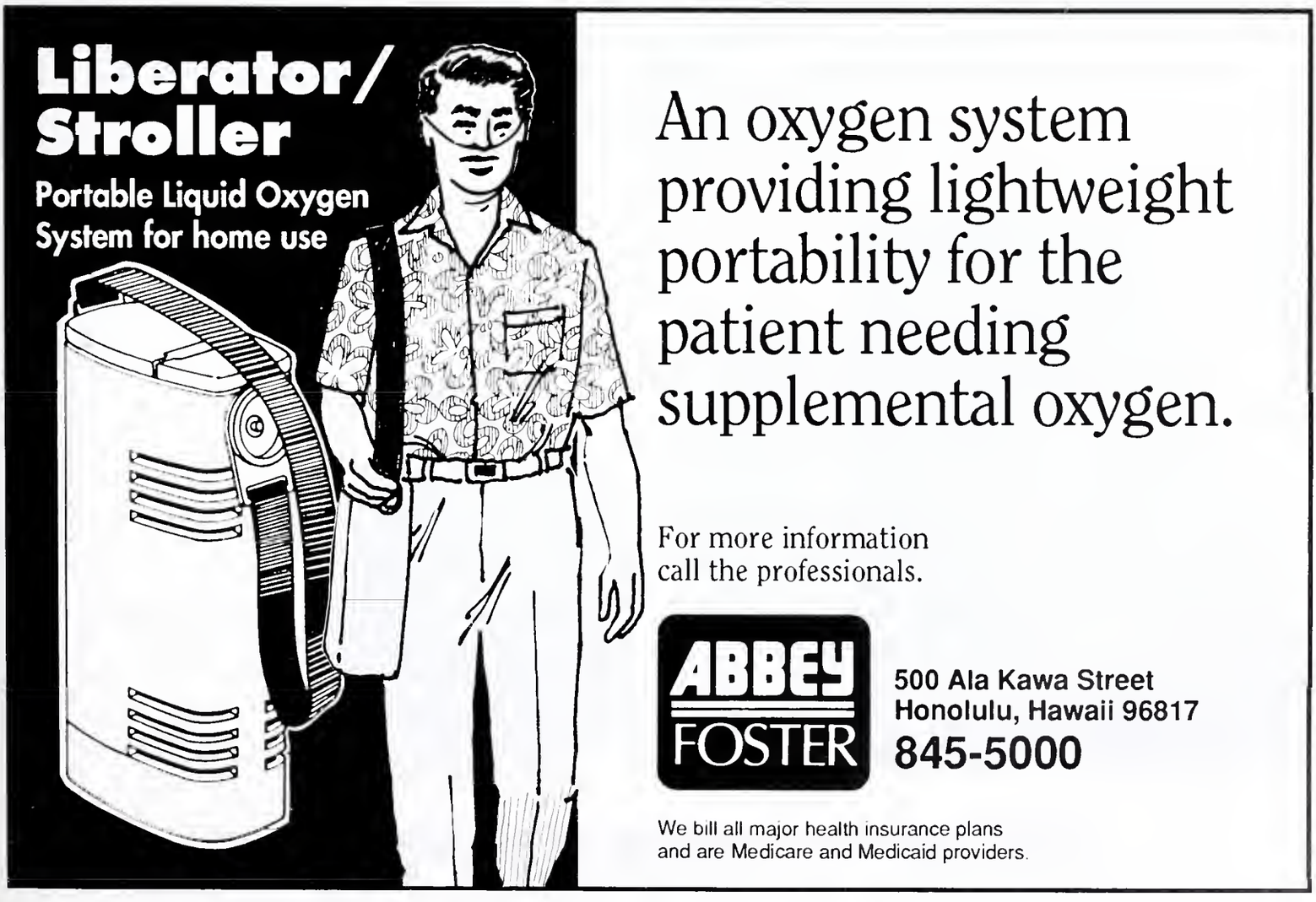
There are times when in the darkness
With the curlers in my head,
I'm not sure if I'm retiring
Or just getting out of bed.

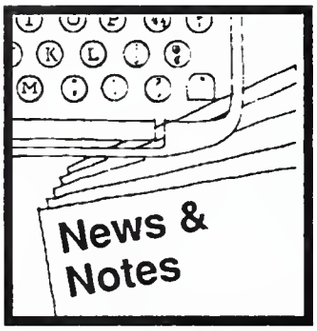
If it's my time to write you,
There's no need in getting sore,
I might think I've already written,
And don't want to be a bore.

Just remember I do miss you,
And I wish that you were near,
But since it's already mail time
I'll say "au revoir" my dear.

Now I'm standing at the mailbox
With my face completely red;
Instead of mailing you my letter
I opened it instead!

Kukui O Pohai Nani
Kaneohe, Hawaii
Volume XXVI, No. 5
May 1990






Henry N. Yokoyama MD

## In Memoriam: Jeff Nakamura

DR. JEFF

A fine young doctor
Who cared for the ill
He gave them hope
And strengthened their will

His days were challenging
Too hectic for most
His relief found in tennis
Ah, there he could boast

I often saw him talking with patients
His laughter full and robust
Patients say "He was my doctor and friend"
"You know ... someone we trust"
He had so much to offer
Its too soon that he left
He'll no longer return my pages
Saying "Hi, this is Jeff"

He's touched many lives
And I'll never forget
This brilliant young doctor
I am so glad I met

Love,
Dorene K Leung
Member, Office Staff

*Notes on Eulogies therefrom:*

Wayne Sakai, attorney and cousin: "Jeff was a 'man for all seasons' ... He was an outdoorsman who enjoyed his summers at Kokee ... Jeff could beat me at checkers as a first grader when I was already in high school..."

Peter Lee, med school classmate: "Jeff was a bit unconventional ... he sat in lectures without taking notes ... Until he had to report to the Dean's office and was sent to see a psychologist ... Jeff was my best man at my wedding and he insisted on coming along on my honeymoon ... He phoned me on January 3 (the day he died) and spoke at length with a great deal of optimism about things to come..."

Danny Kwock, former student, research assistant and business partner: "I knew the human side of Jeff ... I was sort of Jeff's younger brother ... Jeff was my mentor and close friend ... He taught me ambition, drive, responsibility, compassion, generosity, leadership ... His motto was 'give back what you have received' ... Jeff supported medical research and taught me to 'give back' and to be grateful for the gift of life ... He mentioned how a part of him dies inside whenever a patient dies..."

Claude Chemtob, psychologist: "Jeff was always exhorting me to 'start smelling the flowers' ... He was a man of compassion and fierce loyalty ... His heart was always in Hawaii and he had to return home ... Jeff was a visionary ... He envisioned a Japan Hawaii Center for research with endowed visiting professorships ... He had a great capacity for love..."

Alvin Furuike, colleague and partner: "We are faced with the horrible reality of Jeff's departure ... Jeff was a close and dear friend ... a business partner and colleague ... Our personalities were different, but our goals and purposes in life were the same ... We had differences of style, but a similarity of purpose ... Jeff was an extraordinary person ... A great man ... He was a truly good man and touched so many of us ... His memory will always remain within our hearts..."

Osamu Fukuyama, colleague and friend: "Jeff was a 'doctor's doctor' ... a dedicated teacher, researcher and clinician ... He had over 60 publications and was a leading authority of the HTL virus ... He was a man of wide expertise, including daily stock market reports ... The greatest honor bestowed him was the undisguised respect

*(Continued on page 159)* ➤

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Vanda T. Gill



Susan M. Rice

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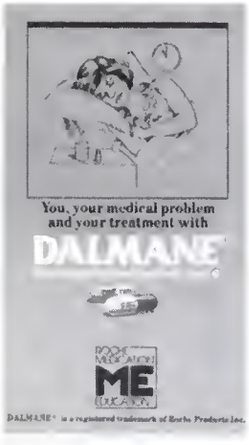


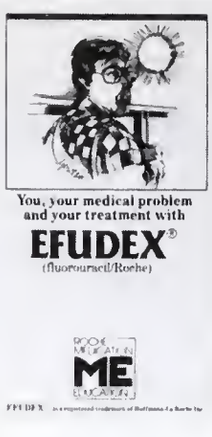
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- Enhancement of compliance
- Satisfaction with office visits

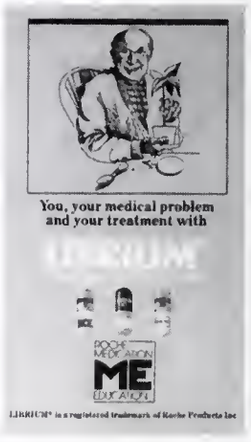
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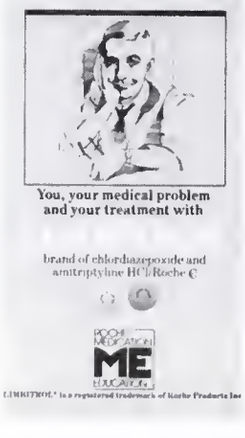


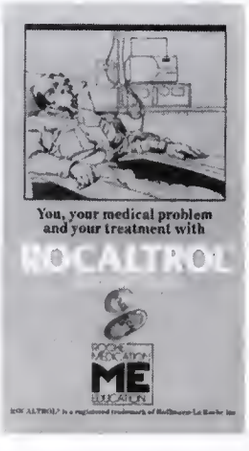







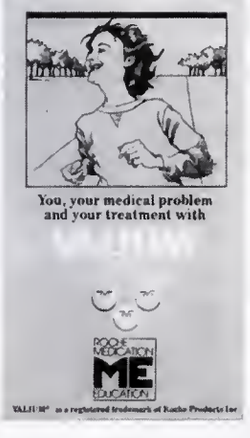








*(Continued from page 156)*

of his students and residents ... Jeff was a man of dignity, modesty and integrity ... a rare and inspirational individual who was also humble and honest..."

David Watamull, tennis colleague, stock broker and friend: "Jeff was a successful human being ... He loved to think and could compete with the best minds ... He saw the limitations of present technology and became interested in biotechnology ... He had a wonderful sense of humor ... He was a guy you could depend on ... and he was my son's godfather ... I once asked my son what he wanted to be when he grew up and his reply was, 'I want to be like Jeff Nakamura'..."

Mel Kaneshiro, Kuakini chief of staff: "Jeff was our director of education since 1983 and belonged to over 15 committees ... He was devoted to our residency program and helped make it a top rated program ... Jeff organized the 1988 International Conference on the HTLV-1 Virus ... He was our Physician of the Year for 1988 ... Jeff was described as being tough, hard nosed and one who yelled at nurses, but he was truly compassionate, soft hearted, honorable and generous ..." (Mel raised his misty eyes heavenward and in a husky voice saluted: "Hey! Take care! See you later!...")

Dick Worthington, pastor and friend: "Jeff was one of the most incredible of men ... He hoped that we all should 'smell the roses.' He was a most benevolent person ... He even offered to send my daughter through college ... The scripture says, 'The Day of the Lord will come like a thief in the night...'" [Ed — He did and stole Jeff Nakamura from our midst...]

## Miscellany

Gorbachev has a long one.
Bush has a short one.
Madonna doesn't have one.
The Pope has one, but doesn't use it.
What is it?
(Answer found at end of column — submitted by Fred R who heard it from a nurse)

* * *

Two elderly women are taking their morning stroll in the nursing home courtyard... Gladys to Ethel: "The whole time that Bill was alive, did you have mutual climax?" Ethel thought a while: "No ... I think we always had State Farm..."

* * *

Slogan: "Be nice to your children because they will choose your nursing home." (Nursing home jokes as told by William Joseph, VP from UCSF)

## Hors de Combat

*Doctors Fight HMSA Over MRI Purchases:* When local hospitals tried to purchase six more MRI's to correct the 10 to 12 week wait for use of the already old fashioned MRI unit at Kewalo Basin, HMSA president Marvin Hall declared, "It's imperative to stop the unbridled expansion of unnecessary, highly expensive medical equipment and facilities if we are to have any hope of containing Hawaii's increasing cost of health care." HMSA sent a letter to Hawaii's employers and community leaders asking them to protest the $16.5 million cost of the machines...

*(Continued on page 160)* ➤


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**NEWS AND NOTES** *(Continued from page 159)*

Neurosurgeon Ray Taniguchi: "That's the same argument HMSA used against buying CT scans in 1975 ... It took a while for them to understand ... It's even more important for the public to understand they are being hurt, not only in the pocketbook, but from a medical standpoint..."

Straub neurologist Leo Maher who trained with seven MRI units in Detroit said, "It was like taking a giant 10-year backward step in time..."

* * *

Plastic surgeon, Maxwell Cooper and other NRA members spoke against the ban of assault weapons at a Kailua Neighborhood meeting in January ... Max contends that people need to practice firing weapons before entering military service and that the law would not prohibit criminal elements from purchasing such firearms...

## Life in These Parts

MEMO TO: Henry Yokoyama, MD
FROM: Jan Estioko,
Director of Communications
RE: HUMOROUS LICENSE PLATES ON OAHU

A vanity plate seen on the drive from Hawaii Kai reads: 2P CME

Must be a urologist?

(Thanks Jan...)

* * *

Intriguing Christmas card (from two urologist friends): WET DREAMS ... Dreamers Wee ... Drs Davis and Steward.

* * *

HAWAIIAN RENT ALL signs (at comer of Beretania and McCully streets):

JANUARY: *SORRY! WE DON'T RENT GAS MASKS ... YET*

FEBRUARY: *WANT A NATURAL HIGH? RENT A LADDER*

MARCH: *OUR HOUSE JACKS ALWAYS SCREW UP*

* * *

The divorce court judge listened to the wife's complaints ... "My husband is always picking his nose ... He always take a cold shower and never let's me take a hot shower ... Our sex life is so dull ... He always insists on the Missionary position ... The judge turned to the husband: "What do you have to say for yourself?" The Filipino husband explained: "When I came from the Philippine Islands (PI), I was told: 'Keep your nose clean ... Never get into hot water ... Don't ever screw up.'" The judge wisely dismissed the case and took the husband aside to explain American idioms...

(Contributed by our friend, Andrew Uramoto)

* * *

Answer to riddle: A last name.

# Maka O Ka Kauka

**Russell T. Stodd, MD**

**The famous politician was trying to save both his faces.**

Senator Ted Kennedy, whose dreams of reincarnating "Camelot" are somewhat under the murky waters off Chappaquidick, is chairman of the Senate Committee on Labor and Human Resources. Recently the committee held hearings on gifts physicians receive from pharmaceutical houses as part of marketing practices. Supposedly, some companies have sponsored "all-expense-paid trips" for *educational* symposia to such vacation spots as Acapulco, Monte Carlo and Palm Springs. The honorable Senator commended the American Medical Association and the Pharmaceutical Manufacturers Association for adopting ethical guidelines to stop such practices. However, the Senator added, "The principal question is whether the industry and the medical profession can heal themselves, or whether additional regulation or legislation is needed." Somehow Ted Kennedy and our S&L-loving, pork barreling, junketeering Senators lecturing on the ethics of accepting gifts poses a contradictory picture.

**No people do so much harm as those who go about doing good.**

*Current legal decision:* US District Judge William Bertelsman ruled that Medicare's anti-kickback law, under which more than 300 counts of criminal fraud were brought, was "ambiguous." He dismissed all complaints brought against a Cincinnati eye surgeon and his medical assistant. They were charged with accepting free surgical packs from IOL makers, and cash discounts on other supplies, but failing to reflect the discounts in IOL claims for Part B reimbursements. This is yet another debit on the growing list of Richard Kusserow's slashing and bashing fraud battalion. This unit is an embarrassing waste of our tax money, a genuine threat to physicians through trial by media, and a loose cannon on the HCFA deck. HHC boss, Dr. Louis Sullivan, has been asked by the Hawaii

Medical Association, the AMA, and many other medical organizations to fire Mr. Kusserow, yet he has consistently supported the man. Mr. Kusserow behaves more like a hanging judge than a watchdog.

**Progress is impossible without change.**

The 1991 HOS Annual Meeting was well attended and presented excellent material devoted almost entirely to cataract surgery and phakoemulsification. During a question session following Dr. Dodick's presentation, it appeared that the great majority of attending surgeons feel more confident performing planned extracap surgery rather than PKE. Possibly the most interesting single item presented was the YAG laser/aspiration technique for cataract extraction — still in a preliminary research mode, but holding promise for a safe and less expensive surgical modality to compete with PKE.

**Facts do not cease to exist because they are ignored.**

Alas, poor Ioptex Research Inc. The surface passivation process which supposedly enhances the character and performance of the Ioptex IOL implant has been held up to suspicion in the past. Now Ioptex is being attacked in court under a civil RICO action. Lynne Becker, a former clinical research associate at Ioptex, managed clinical trials and analyzed data for nearly two years. She claims that the company and its key personnel altered and suppressed data related to clinical trials of the surface passivated IOL for the sole purpose of obtaining a higher level of Medicare reimbursement. Goodness me, could such a thing happen?

**Advertising is the rattling of a stick inside a bucket of swill.**

The Wall Street Journal reports that since Florida and Iowa have banned the use of dramatizations and testimonials in legal broadcast advertisements, now 19 other states are considering such restrictions. Many bar associations say that such ads are misleading and that they demean the profession and promote frivolous lawsuits. The Supreme Court recently refused to review a case

*(Continued on page 162)* ➤


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PEDIATRICIAN - Carson City, Nevada. Pediatrician to join me in primary care practice. Full or part-time possible. Great family environment in Sierra foothills, 30 miles from Reno. Reply ASAP: Susan Pintar MD, 1001 N. Mountain Street, Suiite 3M, Carson City, Nevada 89703 - (702) 883-9003).

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**MAKA O KA KAUKA** *(Continued from page 161)*

challenging the Iowa regulation, but a Florida attorney plans to file a petition in federal court challenging the regulations on First Amendment grounds. "Once it happens to lawyers, it will happen to other professions," said Martin Solomon, a legal spokesman in Phoenix. Would that be so bad?

**There is no better way of exercising the imagination than the study of law.**

Do we live with Alice in Wonderland or what? In California the owner of a manufacturing firm threatened, in effect, to sue himself for negligence — and came away with $122,500 tax free. After being injured at his company's factory, the owner hired one lawyer to sue his firm for negligence, another to defend it, and the attorneys agreed out of court that the employee should receive $122,500. Because it was compensation for injuries, he didn't pay tax on the money, and the company deducted it as a business expense. A tax court ruled the settlement was legal!

**The function of socialism is to raise suffering to a higher level.**

In Britain, with its National Health Service, the primordial model of comprehensive health care, more than 55,000 Britons are awaiting cataract surgery. The solution: eye surgery "camps" as practiced in third world countries. A team of professionals goes into the country, sets up base in a hotel, and performs multiple operations. Surgeon Robert Williams, FRCS, originator of the program, concludes, "This is a useful scheme ... without a compromise in surgical facilities." Others might view the program as an obvious demonstration of failure on the part of government to provide modern medical technology. Ah well, stiff upper lip, old person, wait till you hear how they plan to remove hemorrhoids.

**The duty of the expert is not to be more right than other people, but to be wrong for more sophisticated reasons.**

Alfred Sommer, MD, still another Harvard-trained public health expert, is Dean of the Johns Hopkins School of Hygiene and Public Health. Currently, he heads the Academy's preferred practice pattern development effort (PPP) and is involved in an AMA-Rand Corporation clinical appropriateness initiative, and other government-sponsored guideline efforts. He claims that his strategy is to position ophthalmology in a manner that would allow the profession to exercise greater control over its own destiny. His rationale is that if we wait for others to act, rather than controlling these directions ourselves, we are "as dead as a dodo." Dr. Sommer claims that the PPPs are succinct practical guidelines, that they are honest efforts by representative panels of clinician ophthalmologists, and that the response from ophthalmology has been "fantastic." Lawrence Winograd, MD, of Denver, Colorado, has challenged the PPPs stating that he believes they will provide trial attorneys with documented national standards of care to wave in defendant ophthalmologists' faces. Am I biased (of course, I am), or is it not true that an overwhelming amount of governmental medical "planning" ie, bureaucratic miasma, emanates from that single overbearing, overrated, self-satisfied Cambridge cabal of contumacious commands? I thought our preppy President went to Yale.

**Addenda —**

— Galen named the Iris because it reminded him of the rainbow, and Iris was the Greek goddess of the rainbow.

— Drug abusers under the age of 45 are six times more likely to suffer a stroke than others in the same age group.

— To control the federal deficit, we should convert the budget deficit to electrical voltage — the bigger the deficit, the higher the voltage — and then run the current through our congresspersons. (Choose the specific anatomic part.) Thanks, Geoffrey Braden.

— Graffiti in the Pacific Club men's room, "Dyslexics, UNTIE."

Aloha, and keep the faith.

rts

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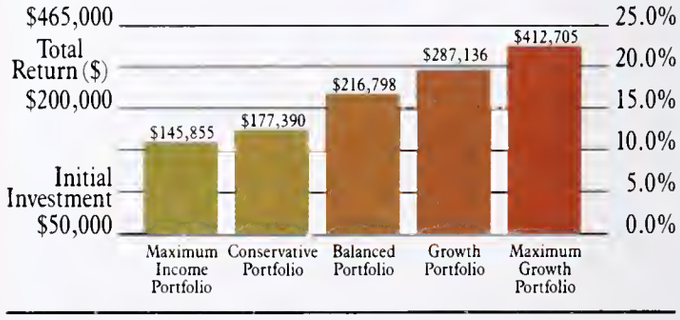
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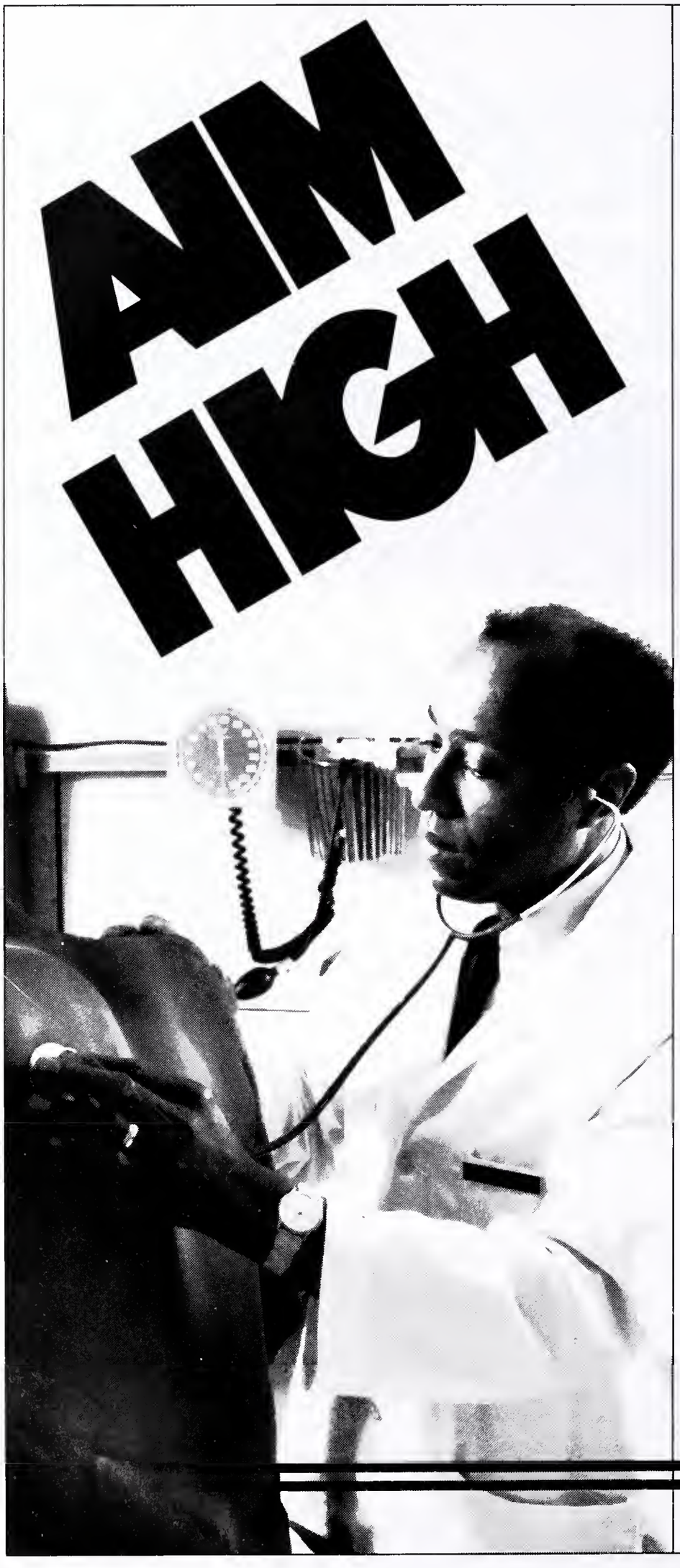
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# Kleona Rigney, MD

Standing tall, slim and athletic, bedecked with leis, Dr Rigney attended a retirement brunch in her honor Friday morning September 28, 1990 in the library of the Department of Health at Kinau Hale. There were some 50 people who came to express their warm Aloha, members of the Department and of the community at large, friends and fellow workers.

She has served for 24 years in the Department, ultimately as Chief of the Preventive Health Services Branch. Walter Quisenberry hired her when he was the Director of Health at the time; he was present and gave a bit of her anamnesis to the assembly, as did others. Kleona is known best for her long and steady campaign to educate the public on the evil effects of smoking cigarettes, Walter pointed out. Others spoke up and revealed that Dr Rigney was not beyond accosting a smoker in the street and advising him or her to cease and desist.

What have the 24 years of effort accomplished? Kleona is too modest to brag, but from the words of the song that her fellow workers and friends belted out in a chorus, it is evident she was regarded with affection by the ex-smokers in the crowd. Preventive medicine is the in thing these days.

The Hawaii Medical Association and the *Journal* wish Kleona well.

J.I. Frederick Reppun MD
Editor

## Oh Dear Dr. Rigney

(Tune: On Top of Old Smokey)

Retirement has come.
To do all the fun things,
Like playing your drums.

A fun game of ten-nis,
With Ah Nee and Forrest.
When it is all over
We'll know who is best.

Your D-O-H Cro-nies
All wait for your call.
To lunch and talk story
Not end up in a brawl.

We do want to thank you,
For being our Branch Chief.
And fighting the battles,
Against smoking the leaf.

Pre-ven-tive Health Ser-vi-ces
Will not be the same.
Yes . . . we will remember (slow-down)
The - ole - Rig-ney - name . . .

---

# Council Capers

## April 5, 1991

The HMA met on April 5, 1991. After a great "plate dinner" of chow fun, sushi, salad, pork chops, and roast beef and gravy, the Council settled down to work.

The meeting was called to order by our President, John McDonnell.

The Secretary's and Treasurer's reports showed that a large number of members were delinquent with their dues as of March 31, 1991. If you have paid your dues, thank you; if you haven't, please kokua.

**Most Important . . .** Dr. Allan Kunimoto reported by proxy that the trust company HMA is pursuing may soon become a reality. He has met with Roger Fonseca, a trust attorney, with good results. As a former pension plan administrator for a large group, I highly recommend this trust company idea, should it come to fruition. Should a public offering of this company be made to you, consider it highly.

**Hail and Farewell . . .** Dr. Bernard Fong introduced Ms Gladys Yamashiro, the new Aetna Medicare Administrator, who will replace retiring Jackson Lee. They both expressed their gratitude to the medical community in the State.

**Great News . . .** At a recent board meeting of MIEC, a request of $15,000 for the Tort Reform legislative program

*(Continued)* ➤

was approved.

**Legislature . . .** With the Legislature now past its midway point, an update was discussed. The legislative committee of the HMA has been doing a good job testifying for and against different bills in progress.

**Laser Surgery . . .** The Hawaii Ophthalmological Society requested a policy statement from HMA for laser surgery to be limited to medical and osteopathic doctors. After an unusually long discussion, it was referred to the Executive Committee for action next month.

Again, I would like to emphasize that this brief summary is the personal impression of a recent meeting and is in no way an official HMA statement.

**Tip of the Month . . .** Gabel Restaurant in Kihei has good food. Harry Gabel was the executive chef at the Hyatt Maui and the Four Seasons. A bit expensive, though good for birthdays or anniversaries.

Denis J. Fu MD
Councilor from Maui

# Highlights of the HMA Council Meeting of April 5, 1991

Members present: J. McDonnell, S. Wallach, J.Chang, A. Don, A. Kunimoto, C. Kam, R. Stodd, R. Ando, F. Holschuh, L. Sakai, R. Lee-Ching, M. Cheng (for R. Laird), C. Wong, K. Brady, H. H. Chun, P. DeMare, H. Fong, M. Shirasu, W. Young, E. Bade, R. Goodale, D. Fu, H. Percy, T. Smith, G. Goto, J. Lumeng, W. Dang, and N. Winn. Also present were: F. Reppun - HMJ Editor, V. Woo, Legal Council, and guests — E. Gramlich, B. Fong, Medical Director - Aetna; Mr. J. Lee, Retired Administrator, Mrs. G. Yamashiro, new Administrator of Aetna-Medicare, and J. Taitague, medical student. HMA staff: J. Won, J. Asato, P. Kawamoto, J. Estioko, L. Tong of counsel, C. Sugita, L. Funai, and M. Lindsey, recording secretary.

• The Council recognized Mr. Jackson Lee, administrator of Aetna's Medicare Division, on his pending retirement, for his exemplary service on behalf of physicians and beneficiaries for over 20 years; it then welcomed Ms Gladys Yamashiro, already with 22 years of service at Aetna-Medicare, who will replace Mr Lee.

• The Council agreed to purchase one table at the Women's Leadership Luncheon to be held on May 8 at the Hilton Hawaiian Village.

• It approved the nomination of John McDermott, MD, for the AMA Residency Review Committee on Psychiatry.

• It approved the nomination of, and assistance in the campaign of, Neal Kaneshiro, HMA's alternate delegate to the AMA Medical Student Section (MSS), for a seat on the MSS governing council.

• The Council will establish an HMA Task Force to "greet" the planned Bill of Rights Tour sponsored by the Philip Morris Company (of tobacco fame) due in Hawaii beginning May 25. The Company donated $600,000 to the National Archives to borrow the original Bill of Rights for a 1-1/2-year tour of the nation, the idea being to promote "freedom" and, of course, the freedom to choose to smoke. The Texas Medical Association has countered this tour with the "freedom to choose health." The HMA Task Force, as well as the Hawaii Cancer Society, the Hawaii Lung Association, and the Hawaii Heart Association will plan an appropriate "welcome" when the Tour arrives.

• The Council decided it would support the AMA effort to fight the fraud of the cosmetic manufacturer Allercreme, which has already been ordered by an Illinois court to cease and desist in its advertising. This manufacturer applied a "SEAL OF APPROVAL of the AMA Committee on Cosmetics" to its products, but the AMA has no such committee and offers no such approval. If anyone is aware of additional violations, please let the HMA office know about it.

• HMA endorsement and use of logo were NOT approved for the "lifetime immunization record" submitted for input by the HMA.

• The Council agreed to co-sponsor a breakfast in honor of May being proclaimed "Mental Health Month" in Hawaii through efforts of the Hawaii Psychiatric Medical Association (HPMA). The HPMA will have honored its selection of the Legislator of the Year at this breakfast (which took place on Tuesday, April 30).

• The Council was informed by the Legislative Update:

— Tort reform legislation scheduled to sunset this year has been extended for 2 years;

— Living Will legislation is still alive;

— Medicaid reimbursement increases are still alive although percentage amounts of reimbursement differ, up to a level of 65% in the House, 60% in the Senate;

— drinking age at 21 adopted for another 2 years;

— cigarette vending machines only in bars and cabarets was passed by House committees;

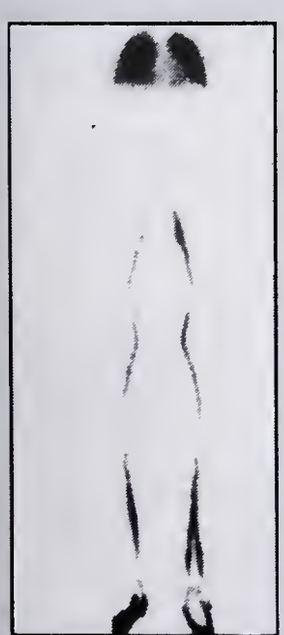
— a bill for an appropriation for the North Kohala Hospital died.

Andrew Don
Secretary

# Nuclear Medicine Teaching File

## RADIONUCLIDE VENOGRAM

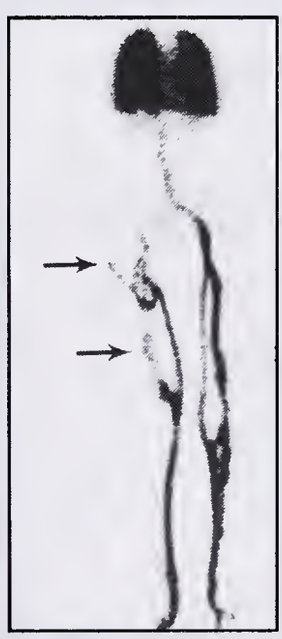
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Normal venogram



Right popliteal DVT

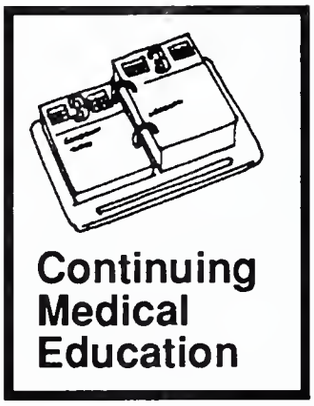


Right iliofemoral DVT


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## LOCAL ACCREDITED PROGRAMS ONGOING

For a complete list of ongoing programs, please refer to the March 1991 edition of the HAWAII MEDICAL JOURNAL. Further information is available through the individual institutions or through the HMA's CME Department.

## SPECIAL EVENTS

All special events should be confirmed with the CME program sponsors, as cancellations are not necessarily reported to the HAWAII MEDICAL JOURNAL.

**JUNE**

6/21/91

****West Hawaii, Women and HIV.** Contact: AIDS Education Project, Department of Psychiatry, 1319 Punahou Street, Room 625, Honolulu, HI 96826, 941-6322. Location: Keauhou Beach Hotel, Big Island of Hawaii.

6/24/91

****East Hawaii, Women and HIV.** Contact: AIDS Education Project, Department of Psychiatry, 1319 Punahou Street, Room 625, Honolulu, HI 96826, 941-6322. Location: UH Hilo, Campus Center, Big Island of Hawaii.

**JULY**

7/7-7/12

**The New Med.** Contact: M. Amlin, Stanford University School of Medicine, Postgraduate Medical Education Office, MSOB, #X365, Stanford, CA 94305. Location: Kamuela, Big Island of Hawaii.

7/9-7/13

**Present and Future Clinical Applications of Tumor Markers.** Contact: Dr O'Neill, 402-280-1830, Creighton University School of Medicine, CME Division, California at 24th Street, Omaha, NE 68178. Location: Kona, Big Island of Hawaii.

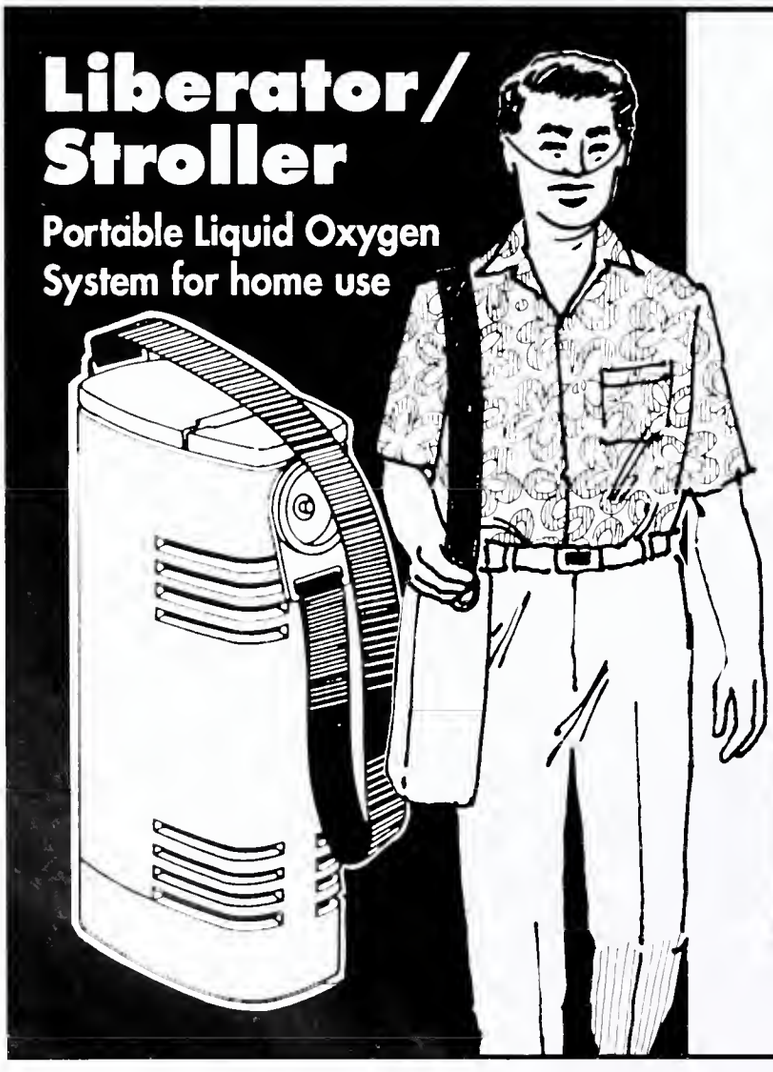
7/12-7/16

**American College of Physicians - University of Hawaii 11th Annual Update and Review of Internal Medicine.** Contact: John S. Melish, MD, Professor and Acting Chairman, UH Department of Medicine, 1356 Lusitana Street, Honolulu, HI 96813, 808-548-2810. Location: Stouffer's Wailea Beach Resort, Kihei, Maui.

7/31-8/3

**Ninth Annual Controversies in OB-GYN.** Contact: CME 213-595-3811, University of California, Irvine, College of Medicine, Office of CME, 200 S. Manchester, Suite 820, Orange, CA 92668. Location: Kamuela.

*All starred conferences are sponsored and/or co-sponsored by the John A. Burns School of Medicine. The John A. Burns School of Medicine, University of Hawaii at Manoa, is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. For registration information, please contact the sponsoring organization.


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# The Maluhia Project: Home Health Care for the Uninsured

Cullen T. Hayashida PhD*
Kathy Anderson RN MS**

*This is a report of preliminary findings of The Maluhia Project: Home Health Care for the Uninsured based on its first 12 months of experience in providing services to clients from September 1989 to August 1990. This Project is now in its third year. This report will initially discuss the rationale for Hawaii's participation in this 5-state national demonstration project. It will cover the basic components of the Hawaii Project and its relative impact followed by a brief description of the clients enrolled. A major component of this program is case management. Given the variety of previous programs that have been referred to as case-management services, a comparison has been provided to note significant differences in approaches and target groups between the Maluhia Project and other existing programs. Finally, this report discusses a number of implementation and public policy issues which have emerged and require further discussion. We hope that as a result of this preliminary report from our first 12 months of operation, it will be possible to inform the medical community of the needs faced by this public health problem that has been previously not addressed.*

## Background

Nationally, the medically uninsured have dramatically increased from about 12.6% in 1977 (or 26.6 million) to 17.5% (or 37 million) in 1987. This upward change represents a major reversal of the steady downward trend immediately after World War II[1]. Swartz has noted that besides the reversal to post-world war public health trends, there are 3 other reasons why national policy-makers are becoming increasingly concerned about the growth of the medically uninsured.

First, when the uninsured seek medical care and cannot pay for services rendered, health care providers cannot find other sources of revenue to pay for their care. In April 1990, Stan Snodgrass, the former chief executive officer of the Healthcare Association of Hawaii remarked that Hawaii's hospitals had incurred more than $90 million in bad debts in 1989[2]. The significance of this was that it was attributed mainly to the uninsured who are unable to pay their bills. The continuation of this problem might eventually result in the bankruptcy of one or more of our major health care institutions. Such a crisis represents a cost that all of Hawaii's citizens must bear.

Second, there is concern that this cohort does not have sufficient access to medical care. It is generally assumed that easy access to medical care will promote its use, and in turn, this will result in a healthier population. Although there are unanswered questions regarding what is optimal medical care and whether medical care per se is the most cost-effective means to a healthier population, there is evidence that uninsured people repeatedly have been shown to have less access to medical care. There is a sense that those not receiving medical attention are often less healthy. The economic and social costs of this trend towards the growth of an unhealthy population are therefore enormous.

Finally, the recent crisis with HIV/AIDS has brought forth the concerns regarding special financial assistance for AIDS patients lest we exceed the fiscal viability of hospitals and cities throughout the U.S. Many advocates for these patients have argued for the use of the Medicare Fund, just as was done for end-stage renal disease patients in 1972. However, it will be difficult to justify such a recommendation without adequately addressing the question of equity for the medically uninsured.

As a response to this concern for the medically uninsured, Congress enacted and appropriated funds for the Health Care Services in the Home Act in 1987. This Act provided funds to 5 states: North and South Carolina, Mississippi, Utah and Hawaii. The purpose of the Act is to demonstrate that avoidance of lengthy stays in hospitals and other institutions for individuals at-risk is possible if a multidisciplinary team of health professionals manages the delivery of home care in which comprehensive and continuous skilled medical and related health services are combined with other long-term care services. The Act hopes to demonstrate the impact that a multidisciplinary team can have on the effectiveness, efficiency, quality and acceptability of the home health program. The Act is directed towards state-initiated programs only. Given the limited time such demonstration projects are granted, in general, we hope that state-sponsorship in addition will assure a

(Continued) ➤

* Project Director
The Maluhia Project
Hawaii State Department of Health
1027 Hala Drive
Honolulu, Hawaii 96817
** Clinical Supervisor
The Maluhia Project
Hawaii State Department of Health
1027 Hala Drive
Honolulu, Hawaii 96817

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commitment to a longer term, provided that each of the 5 state projects are deemed cost effective.

Based on the national guidelines, individuals to be targeted for assistance are to have several characteristics in common: (a) Low income; (b) a very high probability for extensive and repeated hospital and institutional stays due to health problems which could have been managed otherwise in a home setting; (c) the desire to receive their care at home and (d) the inability otherwise to purchase the needed health services. The recipient can be any age, although at least 25% are to be over age 65.

Funding was allocated to state agencies to assess the health needs of the "gap group" over a 3-year period beginning with the federal fiscal year 1989. Based on the Act of 1987, federal contributions were 75% in the first year, 65% in the second and 55% in the last. State matching funds make up the difference. Hawaii's program has been based on a $1.3 million budget in each of its 3 years according to the aforementioned federal/state formula. This national demonstration has just be extended for another 3 years up to the Fall of 1994.

### Basic components of the Hawaii project

The Hawaii Project is sponsored by the Hawaii State Department of Health (DoH). It is situated at Maluhia — a long-term care health center in Honolulu. It is known as The Maluhia Project: Home Health Care for the Uninsured. As with the national program, the Maluhia Project's original application targeted the uninsured who were frequent users of hospitals and emergency rooms. Since then, the Project has expanded its services to the underinsured as well. The project began in October 1988 with its first year devoted entirely to planning and development. This report discusses the second year of the project or the first year of delivery of clinical services.

**Services:**

Services provided by the program include screening, information and referral, comprehensive assessment, care plan development, home health-care services, case management and financial coverage by the Project's funds. A direct service, professionally-led, interdisciplinary team manages the care provided to each client enrolled in this program. A core team composed of a physician, nurse and social worker, augmented by paraprofessional home health aides, work to keep clients at home. Occupational and physical therapists are involved as needed. Education and training of patient and family along with family support are also integral parts of the total services rendered.

One of the key characteristics of this program is its control over its own service dollars and the fact that home health services are not limited to the Medicare definition of skilled home health care. The Project's definition of skilled care includes (1) observation and assessment of the clients' condition, (2) and of medication compliance on a long-term basis, (3) extended professional services to clients at-risk for rehospitalization or nursing home placement and (4) counseling and family support. In addition, unlike a typical home health-care service, which is driven by health care insurance dollars, clients enrolled under this program continue to be case-managed even when "skilled" home health-care services as defined by Medicare are no longer required. Continuity in case management provides an opportunity to monitor the client's condition to prevent reoccurrence of acute episodes as much as possible. This project emphasizes the importance of mutual participation by client and caregiver with the project's staff. Self-care skills needed in the maintenance of the client's health are taught to both the client and the caregiver.

Using funds from federal and state sources, this project is able to cover the cost of the comprehensive assessment, care plan development, nursing, social work, occupational and physical therapists, physician services, durable medical equipment and other related expenses such as health-related transportation services. If medication is required, the client would be expected to share partly in the cost. The Project is aimed at serving those in need of home health care but who do not have the ability to pay for it.

In-hospital, institutional long-term care and emergency room services are not covered by the Project. Likewise, personal care not related to a skilled home health-care service is also excluded, as are personal care supplies (eg, diapers, toiletries), housekeeping, chore services, food supplements or prepared food and dental services. On occasion, the Project is able to identify appropriate clinical usage for its funds that are not part of its usual list of approved services. In any event, these additional services are not reimbursable unless they are preauthorized by the Project's staff.

**Strategies:**

The Hawaii Project utilized 3 strategies in the delivery of its services on Oahu during the 2nd year. These strategies, or service delivery methodologies, were aimed at developing recommendations regarding the most cost-effective means of delivering services. Essentially, the service delivery methods varied in terms of the degree to which other home health-care agencies were contracted to provide direct home health-care and/or case-management services. Use of contract services was a means to limit the necessity of hiring a full complement of health professionals for a short-term and to increase the responsiveness of the Project. This approach also encouraged the participation of other existing home health-care agencies and reduced the cost of servicing outlying areas on Oahu.

The 3 approaches involved either the full delegation for both home health care and case management services, the partial delegation of only home health care services to agencies with case management provided by the Project, or full service provision by the Maluhia Project within West Honolulu.

At the time of this assessment, modifications have been made to the target areas and the designated agencies that provide for services. Designated agencies are now providing full delegation for home health care and clinical case management outside of Maluhia's primary service area (eg Moanalua to University).

All cases continue to enter through a single point of entry. All cases are referred initially to the Project for eligibility determination. Cases have been referred from a number of

*(Continued on page 176)* ➤



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sources but primarily from hospitals, home health-care agencies and community-based case-management programs.

### Eligibility requirements and alterations

Because The Maluhia Project is Hawaii's first program directed specifically at the medically uninsured, there has been relatively little previous data to rely on for direction. As a consequence, the Project has experienced a need to modify its eligibility criteria as a means of identifying clients for the program and to meet the needs of Hawaii's particular gap group appropriately.

Initially, the Project was limited by a fairly restrictive definition of "skilled home health-care" closely aligned to the Medicare regulations. In addition, the target area was limited to 3 regions on Oahu and to those persons whose sources of income did not exceed 150% of the federal poverty standards for Hawaii. Over time, the Project has revised its eligibility criteria to meet the unique needs of Hawaii and to encourage more referrals. Figure 1 lists the revised eligibility criteria for the Project based on the experiences of the Project's first service year. Besides the annual adjustment to the thresholds of the federal poverty guidelines, the Project may modify the criteria for eligibility, depending on other factors.

FIGURE 1
Eligibility Criteria

1. Client resides on Oahu.
2. Client is 18 years or older.
3. Client does not have home health insurance benefits or has been denied coverage or requires uncovered services.
4. Family income does not exceed 300% of Federal Income Poverty Guidelines for Hawaii as shown: (Feb. 1991)

| Size of Family | Monthly Gross Income |
|---|---|
| 1 | $1,902 |
| 2 | $2,552 |
| 3 | $3,202 |
| 4 | $3,852 |

Add $615 for each additional family member.

5. Family savings (liquid assets) limited to $4,000 per person; does not include home.
6. Client is at risk for prolonged or recurrent hospitalization or institutionalization, as demonstrated by one of the following:
   a. Long length of stays in hospital or nursing home
   b. frequent readmissions to hospitals (2 or more times a year for any problem)
   c. frequent emergency room visits (2 or more times a year for any problem)
   d. medically or socially complex health condition
   e. vulnerable client/families in need of coordinated medical and social services
   f. potential nursing home placement
7. Client requires skilled services.
   a. Case Management:
      • coordination, collaboration and monitoring of home health and other related services
   b. Direct health services in the home:
      • skilled nursing
      • social work
      • physical therapy
      • occupational therapy
      • speech/language therapy
      • nutritional counseling
      • teaching and counseling
      • family support
      • home health aide
8. Client/family/primary caregiver and physician are willing to participate in a managed system of care, recognizing limited service resources.

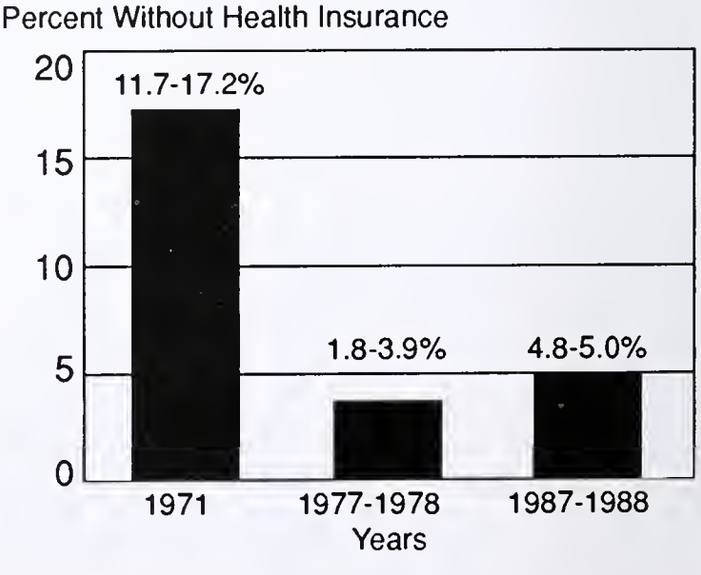
At least 2 major factors have had a significant impact on finding cases. First, Hawaii has a relatively small proportion of its population designated as medically uninsured. As a result of Hawaii's Pre-paid Health Care Act of 1974, most employers provide health insurance coverage for those working 20 hours or more a week. Therefore, the number of medically uninsured dropped from a high of 17.2% of the population in 1971 to a low of 1.8% in 1977-1978. Since then, records indicate that Hawaii's uninsured population is again growing. Although some have estimated that it represents only 3% today[3], most consider a 5 to 7% estimate (ie 60,000 to 84,000 in 1990) more accurate. When the estimate is limited further by targeting only the uninsured on Oahu who are in need of home-health case-management services, the difficulty in locating eligible clients becomes apparent.

A second factor that necessitated adjusting the Project's eligibility criteria after the first half of the first year was the liberalization of the State's Medicaid policies in late 1989. During that time, Hawaii's Medicaid program increased its eligibility limit from 62.5% of the federal poverty guideline to 100% for the elderly and the disabled. In the instance of families with dependent children or of poverty level beginning in January 1990, the Medicaid program has also liberalized its enrollment by its repeal of the ruling on requiring financial responsibility by alien sponsors. As a result, indigent alien applicants for Medicaid are no longer disqualified as a result of their sponsor's above-average financial status.

### Sources of referral

During the course of the1989-1990 fiscal year, there were 198 referrals from numerous sources. Among these sources,

FIGURE 2
Proportion of Hawaii population without health care insurance

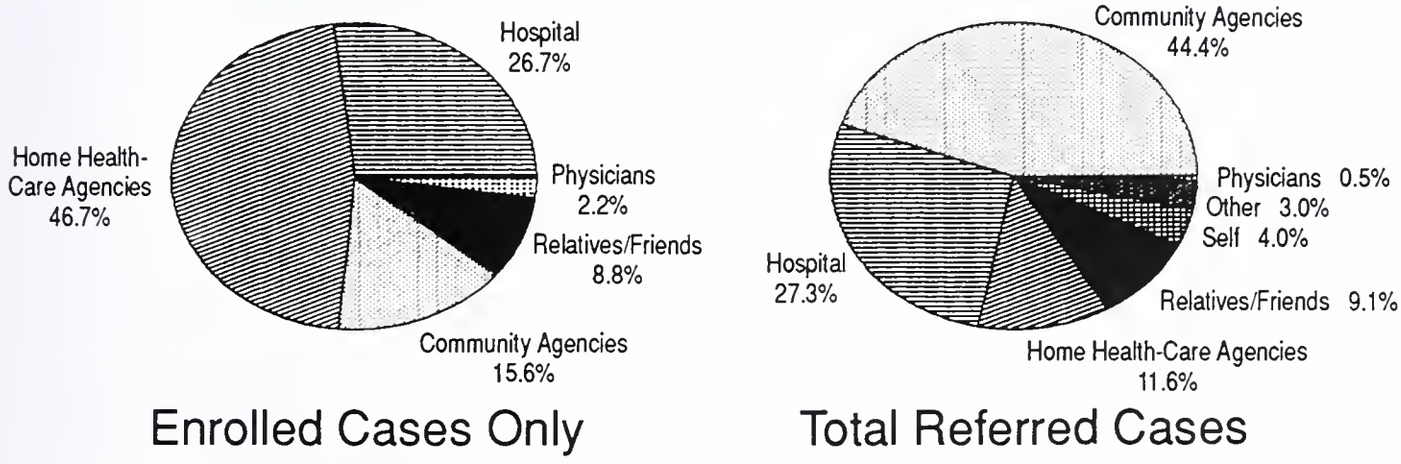



Source: Hawaii Department of Health

community-based agencies (eg case-management programs, social service agencies for the elderly, public health nursing) referred the most cases (44.4%). Others that also contributed were hospitals (27.3%), home health-care agencies (11.6%) and relatives and friends directly (9.1%). Physicians were not significantly involved with referrals (0.5%); this may be due to a lack of knowledge about the Project or what the Project's services cover.

According to Figure 3, the pie chart representing only the enrolled clients indicates that there was little correlation between the proportion referred and the proportion enrolled from various sources. Most notably, home-health-care agencies (46.75%) were the Project's most reliable and appropriate source of referral, probably because they best understood the

FIGURE 3
Comparison of Referral Sources
Total referred cases vs. enrolled cases — September 1989 to August 1990




Total referred cases = 198 Enrolled cases = 45

FIGURE 4
Case Examples from the Maluhia Project Files

This is a 43-year-old part-Hawaiian unemployed laborer, married and living in his mother-in-law's home with his wife and three younger children. His four older children visit frequently. He was referred to the Project by a hospital social worker since he had no health insurance and was in need of home care for wound management and home IV antibiotic therapy. His diagnoses are infection in his left heel, diabetes mellitus type II, diabetes nephropathy with proteinuria.

He was first diagnosed as a diabetic in 1987 when he was hospitalized for cellulitus secondary to an infected right heel wound. He was placed on Micronase with no apparent follow-up for his diabetic condition. Due to the lack of sensation, he was initially unaware of a punctured left heel wound in 1989. He was treated as an out-patient with Augmentin 250g po tid for about 3 weeks, then hospitalized on the wife's insistence.

Home health-care and case-management services have been involved with wound care, IV antibiotic procedures, diabetic education including glucose self-monitoring. Case-management monitors his diabetic condition.

* * *

This is a 55-year-old Filipino man who was a former self-employed television repairman prior to his right CVA, left hand dominance. He lives with his second wife and their 2 children, ages 18 months and 3 years. He was assessed by the Project about 4 days following hospital discharge. He has no medical coverage. His diagnoses are right paraventricular cerebral infarction, hypertension, diabetes mellitus type II insulin dependent, abnormal chest x-ray scar from an old tuberculosis and a history of Bell's Palsy. He has left hemiparesis. He is able to feed himself but swallows with difficulty. He wears an eye patch to obliterate double vision and dizziness. He has been highly motivated towards rehabilitation but faces numerous financial and family relationship problems. The Project monitors his hypertension and diabetic status in coordination with his physician and has taught him glucose self-monitoring. The Project nurses coordinate occupational and physical therapy services. The Project's social worker has been providing family financial counseling, access to legal counseling and assistance in family problem-solving.

* * *

This is a 53-year-old woman, owner of a plant nursery. She is a part-Hawaiian woman who has been separated from her husband for approximately 10 years of her 30-year marriage. She was referred to the Project by a public case-management agency that had received the case from an HMO hospital which does not include physical therapy services in its home-care benefit package. The client is diagnosed as having multiple CVAs hypertension and diabetes mellitus type II. The CVA has left her with self-care deficits, G-tube feeding, speech problems, and dysarthria. In addition, she has higher functional deficits such as in food preparation, shopping, housekeeping because of her difficulties with mobility. Abstract and mental processing skills have also been affected. The family's home poses difficulties for her, given the need to negotiate 20 steps to reach the front door.

Her family support system is excellent due to her husband's and children's positive attitudes in encouraging her to reach her maximum potential for independent living. The Project's services have included educating the client and her family about stroke, hypertension and diabetes. It has also included close collaboration with the physician regarding her medication compliance and glucose-monitoring as well as OT and PT progress. The client is now attending adult day health-care to maintain her mobility skills and to provide socialization. Speech therapy assessment of the client's dysarthria and dysphagia will be needed when there are some oral movements.

*(Continued)* ➤

eligibility criteria. Hospitals (26.7%), community agencies (15.6%), relatives/ friends (8.8%) and primary care physicians (2.2%) were responsible for the remaining enrollees. Self-referrals based on information obtained from newspaper articles have not proved to be effective so far. The Project also found that among the various hospitals, most of the appropriate referrals came from only 3 hospitals. Other facilities with similar types of patients did not refer as many cases, indicating a lack of sufficient knowledge and understanding of the Project. Clearly outreach and marketing are required to increase referrals from all provider groups and to reduce inappropriate referrals. Since outreach has been increased and eligibility further clarified, referrals have since become more appropriate.

### Characterizations of accepted clients

Generally speaking, Hawaii's medically uninsured tend to be the near-poor unemployed, those who work fewer than 20 hours a week, those employed in family businesses, seasonal agricultural workers, adult dependents of low-income workers, some government workers ineligible for public employee plans, some salespersons working on commission and many children[5]. Figure 4 provides 3 case examples to illustrate some of the types of clients that are enrolled in the Project.

### Demographic statistics

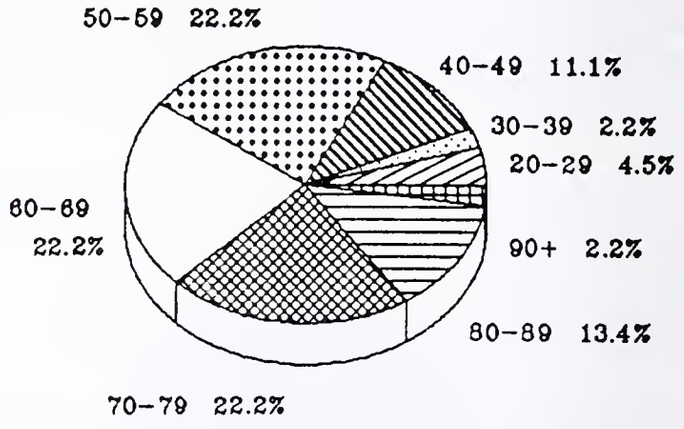
From September 1989 to August 1990, there were 198 referrals to the Project. Of these, 45 were admitted; 9 were discharged due to death, relocation outside Oahu or placement in nursing homes, leaving 36 that were being managed. Of the 36, 16 were at the ICF-level of care and 8 at the SNF-level. One-third of the clients were immigrants. Most were at the above-designated levels upon entry and have since improved in their ability to function. All cases required case-management services. Services included skilled nursing assistance, training of patient and caregiver and linkage with other resources in the community. The most common problems included noncompliance, patient-physician communication difficulties and patient/family's lack of basic knowledge about the patient's medical and dysfunctional status. Social work services centered on financial issues such as money management, the search for entitlements and grants for needed supplementary services, and counseling.

As noted in Figure 5, the majority of the clients (60%) were over 60-years of age. There were approximately 31.3% between 40- and 59-years old and very few between 18-to-39 years old (6.7%).

In Figure 6, the ethnic distribution of the Project's caseload is illustrated. Based on the information provided, the Filipino group comprised 33.3 percent of the clients. Other significantly large groups included the Japanese (15.7%), Hawaiians (13.3%), Caucasians (11.1%) and the Chinese (11.1%). The remaining groups included the Samoans (6.7%), Portuguese (4.4%) and all others (4.4%).

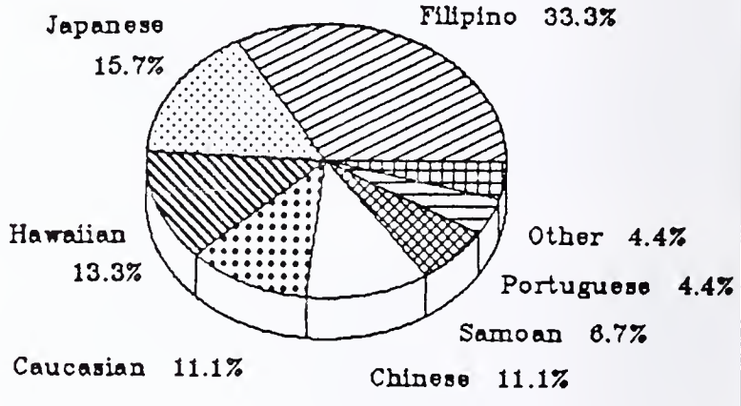
An analysis of data on client origin in Figure 7 reveals that 40% were from Honolulu proper. The second most significant source was the Waianae coast/Ewa Plains area which account-

FIGURE 5
THE MALUHIA PROJECT
Age Distribution of 45 Clients



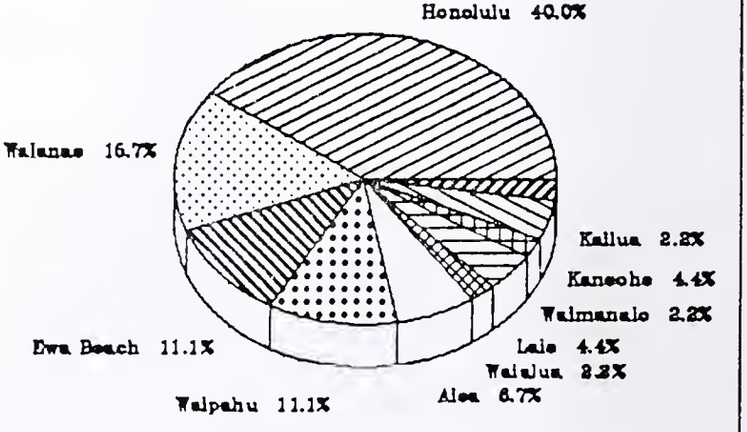

Date: August 1990

FIGURE 6
THE MALUHIA PROJECT
Ethnic Distribution of 45 Clients




Date: August 1990

FIGURE 7
THE MALUHIA PROJECT
45 Clients' Origin on Oahu




Date: August 1990

ed for 26.4% of the clients. The Leeward area (15.8%), North Shore (7.9%) and the Windward coast (7.9%) made up the remainder.

**Medical diagnoses**

Figure 8 portrays the prevalence of several medical diagnoses among the 45 clients enrolled. Based on the data obtained, diabetes, hypertension and heart problems were present about 33% of the time. Respiratory problems (17%) and strokes (20%) were the next most prevalent problems, followed by eye-ear problems, arthritis, cancer and infections/wounds at about 13.3%. The least prevalent categories included kidney and liver diseases at 6.7%; all others were 17%. The latter included a mix of Alzheimer's disease, orthopedic problems, GI problems, Parkinson's, nonmalignant tumors and encephalopathy. Ninety-nine different diagnoses were recorded among the 45 enrolled clients. The clients averaged 2.2 diagnoses each.

**Insurance Coverage**

One of the most remarkable findings to date has been the relatively small number of clients who were without any insurance at all. At the time of this analysis, 9 clients were actually uninsured. Nevertheless, this small proportion at the end of 12 months is not indicative of all clients at the time of enrollment. Given the role of the case managers as brokers and coordinators of services, some of the clients who initially enrolled without insurance were subsequently linked to existing programs, namely Medicaid and the State Health Insurance Program (SHIP). However, most of the clients had very limited coverage by one or more health insurance programs.

Given their physical status, those with limited health insurance coverage were underinsured. The Kaiser Permanente Medical Care Plan, for example, does not cover home-based occupational, physical and/or speech therapy or medical social work services. Medicare's home-health benefits require that the patient be homebound and HMSA has a 150-visit limit per year. In addition, no medical insurance plan covers case management as a skilled home-health-care service. Over time, it is anticipated that inadequate health coverage will become an increasingly serious issue.

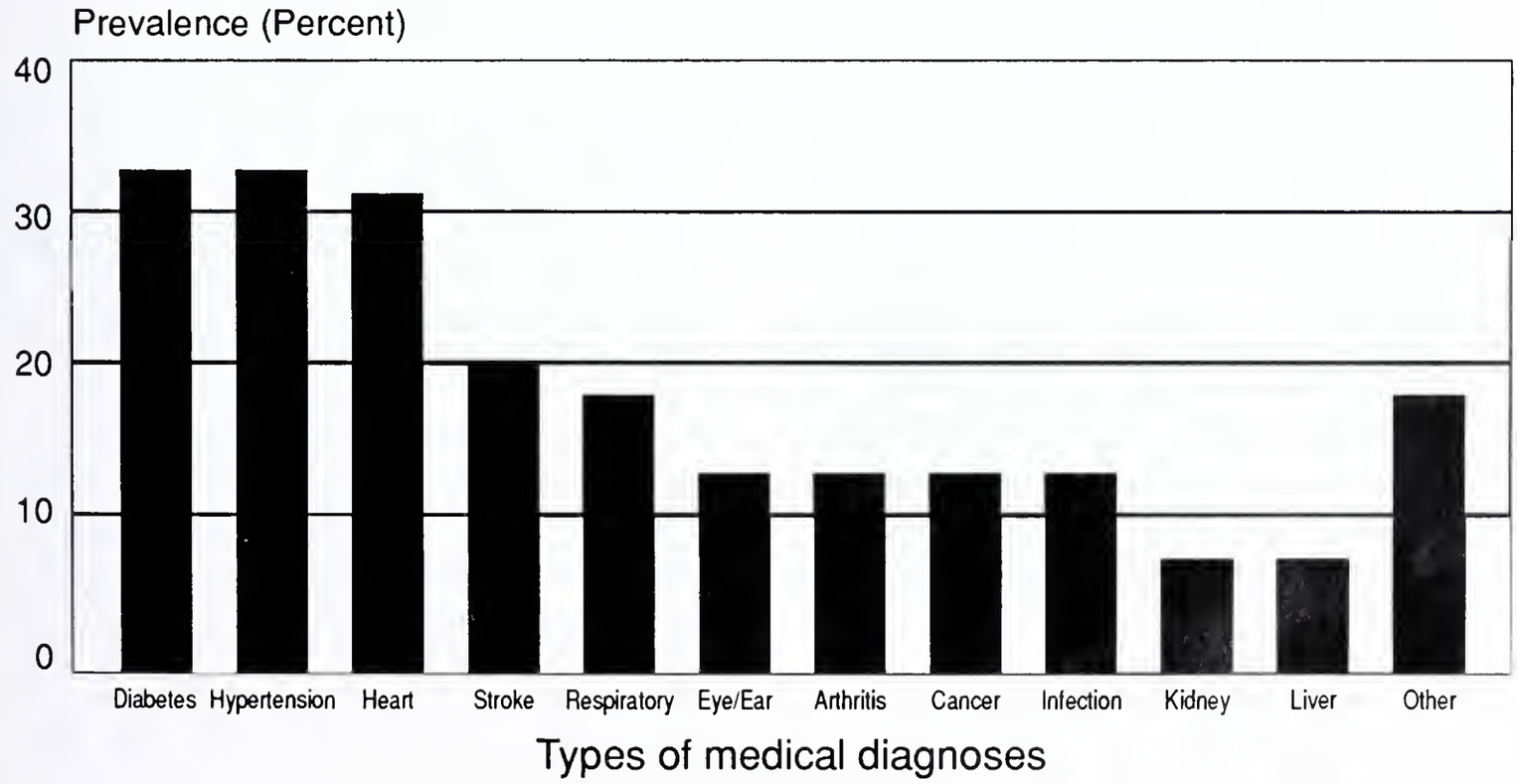
**Outcome**

Although it is still too early to assess the full impact of the Project's services, preliminary evidence suggests that it is effective in reducing rehospitalization and excessive emergency room visits. As a rough estimate, 50 clients enrolled between September 1989 and 1990 were evaluated as to their use of hospital and emergency room services during the 12 month period prior to August 1990. There were 72 hospitalizations (144%) and 31 emergency-room visits for a 62% use rate. By comparison, the 12-month period ending in Septem-

FIGURE 8

## Prevalence of diagnoses among 45 clients

### September 1989 to August 1990




Total Number of Dx = 99
Average Number of Dx/Patient = 2.2

*(Continued)* ➤

ber 1990 revealed only 21 hospital admission (42%) and 14 emergency room visits (28%) by this particular group.

### The differences from other case management services

As noted above, the key components of the Maluhia Project were its combined use of (a) home health care and (b) case-management services on a (c) long-term basis using its (d) resources of federal and state funds and (e) based on assessment and monitoring by a multidisciplinary team. Control of financial resources by the multidisciplinary team permitted the delivery of services on a timely basis. Long-term case management provided the assurance that frail clients who improved enough to be on their own were not abandoned. Monitoring continued for at least 3 months.

Figure 9 is a comparison chart of the major community case-management services on Oahu in terms of the nature of their assessment capabilities, the availability of home-health care, personal care and case-management services. As noted in the chart, the Maluhia Project is unique in the multidisciplinary nature of its assessment. It is also unique, given its ability to provide professional home-health care and long-term case-management services.

### Identification of issues

During the course of this Project, there have been many concerns and issues raised. The issues identified are not necessarily new or unique. Nevertheless, these concerns point to what is common to all community-based, long-term care services as they have attempted to provide quality and cost-effective care in settings that are difficult to manage or to assure compliance from clients.

The Hawaii Project maintained that an important criterion for enrollment in the Project was the full cooperation of the client, family caregivers and the physician. In time, however, it became quite obvious to the Project staff that many of its clients and their caregivers were not easy to work with. It became apparent that this "lack of full cooperation" may be considered indicative of "complex case management" requiring the highest level of clinical skills, patience and perseverance. It still is not clear at what point lack of cooperation should be grounds for termination. Guidelines will be forthcoming based on the experiences encountered over the course of this Project's demonstration period.

There is a concern regarding the identification of its target group. One of the criticisms that has been raised regarding traditional Medicare reimbursed home-health-care services is its inability to provide long-term continuity of care. Continuity of care by a case manager represents an important method to assure linkages with health-care professionals and access when a change of client status is identified. The Project has assumed the responsibility of providing long-term continuity of care with case management for the duration of the Project as long as it is deemed beneficial to the client. However, long-term management may not be cost-effective unless it is well targeted to the most frail and to those at greatest risk for institutional care. The Project's eligibility criteria has been refined as the Project has gained more understanding of Hawaii's uninsured and underinsured concerns.

The Project has been providing client services using 3 service delivery strategies as discussed earlier. Assuming that cost-effectiveness will have been demonstrated, an evaluation

FIGURE 9
COMPARISON OF MAJOR COMMUNITY CASE MANAGEMENT PROGRAMS
OAHU 1990

| PROGRAM | ASSESSMENT | | | | HHC | PERSONAL | CASE MANAGEMENT | | FEE & OTHER COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| | MED | RN | SW | OTHER | | CARE | SHORT | LONG | |
| Maluhia Project | x a | x | x | | x | x b | | x | Free; Uninsured and Underinsured; demonstration project. Oahu. Age 18 and medical risk, need skilled home care. |
| Kuakini Geriatric Consult | x | x | x | x | | | x | | Medicare; geriatric assessment; limited intake. Oahu only. Age 60+. |
| Nursing Home Without Walls | | x | x | | | x | | x | Medicaid eligible only; ICF/SNF levels; limited caseload; Statewide. All ages. |
| Project Malama | | | x | | | | | x | Free; no income criteria; long waitlist; Oahu only. Age 60+. Require 2-3 ADL. |
| Public Health Nursing | | x | | | | | | x | Free; low income emphasized; limited visits; Statewide (selected areas); large caseloads. |
| Honolulu Gerontology Program | | | x | | | | x | | Free; crisis & short-term management. Age 60+. |
| Catholic Charities | | | | x | | x c | | x | Free; Oahu only, no income criteria. Age 60+. |

LEGEND:
a = Physician - consultant only
b= home health aid services available when there is a skilled need
c = Chore, escort, transportation

Note: This comparison chart does not incorporate case management conducted by the Dept. of Health's Mental Health Division, Developmental Disabilities Branch. Electronic Alarm Monitoring Services, Day Centers, etc.

of the 3 service delivery strategies will provide additional clues regarding the most appropriate means of delivering services to the uninsured and underinsured.

Referrals and admissions have been slow but steady and appropriateness has improved with further outreach to referral sources. As of April 1991, for example, the Project's census has exceeded 115 cases. Linkages have been made with Hawaii's SHIP program to provide home care to those who need it since SHIP does not include home health care. The Project also is expanding its services to Hawaii County by summer 1991 and to the other neighbor islands at a later time.

The Project foresees the need for closer collaboration with the medical community for appropriate referrals and medical care. While the Project staff already coordinates the clients' plan of care with attending physicians, it may be that home visits by physicians may be instrumental in preventing or postponing hospitalization or long-term care institutional placement in some cases.

## Conclusion

This report represents an initial attempt to inform the Hawaii medical community of the status of the Maluhia Project: Home Health Care for the Uninsured after one year of service delivery. This demonstration project represents one of Hawaii's first attempts at serving the medically uninsured and underinsured. Together with Hawaii's SHIP that has enrolled nearly 11,000 members to date, the Hawaii State Department of Health is moving toward the development of a comprehensive health service plan for all.

Federal reauthorization of this national demonstration project as exemplified in the recently enacted Home Health Care Demonstration Projects Extension Act of 1990 signifies support until September 1994. It is hoped that this extension will provide sufficient time to build up the referral and enrollment rate so as to identify the needs and target groups who benefit most from these expanded services. The Project will collect data on the identified uninsured and underinsured to facilitate improved access for their health care. It also will assess the programs cost-benefit ratios and thereby propose a means for continuation of the program if that is appropriate. The participation of the medical community in identifying and referring cases will be a critical link in ensuring that services are rendered to those who are the highest risk and will assist in helping the Project demonstrate a continued need for such services.

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## YOHIMBINE HCl

**Description:** Yohimbine is a 3a-15a-20B-17a-hydroxy Yohimbine-16a-carboxylic acid methyl ester. The alkaloid is found in Rubaceae and related trees. Also in Rauwolfia Serpentina (L) Benth. Yohimbine is an indolalkylamine alkaloid with chemical similarity to reserpine. It is a crystalline powder, odorless. Each compressed tablet contains (1/12 gr.) 5.4 mg of Yohimbine Hydrochloride.

**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympathicolytic and mydriatic. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.[1,2] Also dizziness, headache, skin flushing reported when used orally.[1,3]

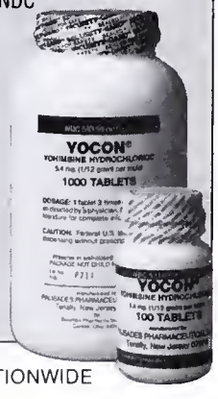
**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

**References:**

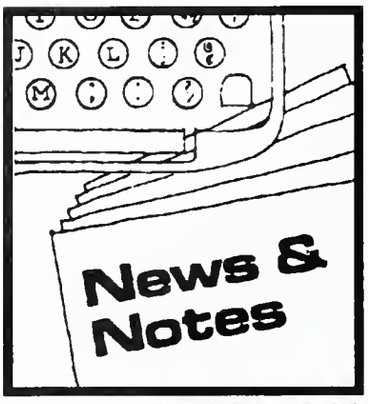
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3. Weekly Urological Clinical letter, 27:2, July 4, 1983.
4. A. Morales et al., The Journal of Urology 128: 45-47, 1982.

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Henry N. Yokoyama, MD

## Life in These Parts. . .

For more than 2 decades Hilo public health nurse Lois Yamada had counseled a part-Hawaiian mother of 10 on contraception without obvious success. Lois felt defeated. Then one day, one of the daughters who had a child 5 years earlier came to the office and sought Lois out. "Mrs. Yamada, is it OK to have another baby now?" Lois was in seventh heaven. . .

(As told by fellow PHN
Patsy Matsuura from Hilo)

* * *

*On Authors* . . . Sans fanfare, sans recognition, sans feedback, Aiea pediatrician-nephrologist Mitsuaki Suzuki has been diligently writing medical articles for the Hawaii Hochi since 1985... Mits recently wrote his 119th article ... His forte is medical topics based on actual cases he has handled in his practice. The articles are written in plain understandable language (ie, if you read Japanese) and popular with the community...

* * *

*YAMAZU Colon Cleanser:* A 74-year-old, retired Japanese carpenter first noticed black stools the evening before ... A ROS revealed intermittent hunger pains the past month, but he had never really looked at his stools ... His Hgb was 9.7 and an upper GI series showed duodenal deformity but no ulcer. He was started on $H_2$ Blocker therapy and instructed to observe his stools. Two weeks later, he felt fine and proudly reported that his stools were now bulky and normal ... His wife had heard about YAMAZU Colon Cleanser from Japan and was feeding him two packets a day ... Our suspicion aroused, we repeated his HgB which was down to 7.8 gms ... We asked him to tell his well-meaning wife that his colon really did not need any cleansing, and he did well thereafter...

* * *

*Our Samurais:* Ben Tom, our philosopher-surgeon had just finished 5 volumes of Yoshikawa Eiji's *Miyamoto Musahi* ... He raved about the discipline of the samurai Shugyosha and how the priest Takuwan had straightened out the rebellious Takezo (Ben was equally impressed when we told him we had read the original 9 volumes in Japanese over 50 years ago...)

Noboru Akagi is our favorite surgeon-swordsman who has a 7th Rank in kendo ... Noboru has taught kendo in Aiea for more than 25 years and has taken his strong Hawaii kendo teams to Japan, Korea, Europe, South America, Canada and the Mainland for tournaments ... Radiologist Ghim Yeogh, a former student had to give up training after his auto accident. A promising novice now training with Noboru is neurosurgeon Warren Ishida who enjoys the discipline...

## Conference Humor

God and St Peter had a Wednesday afternoon off. "Let's play golf," suggested St. Peter. They grabbed their clubs and got on a manicured celestial course ... St Peter was up first ... Swoosh! He drove the ball 300 yards. God got up next and took a mighty swing ... Swish! ... The ball dribbled 6 inches from the tee. Just then a gopher popped up, grabbed the ball and headed for the trees. A hawk materialized, swooped down on the gopher and flew toward his nest. A giant thunderhead suddenly loomed in the sky with claps of thunder. A lightning bolt flashed down striking the hawk ... The hawk dropped the gopher still carrying the ball in his mouth ... The gopher hit the ground and the ball trickled to within 2 inches of the cup for a gimme! St Peter complained: "Ah! God! Stop screwing around and play golf..."

(As told by Dennis Meyer at
a Mabel Smyth conference...)

* * *

(Ole and Lena jokes by QMC pathologist Mary Flynn who hails from Wisconsin)

Lena had died after a long illness and went on to heaven ... A few weeks later Ole died in an auto accident and faced St Peter... "Did you ever cheat on Lena?" "Not even once," Ole replied... "Then you can have this snazzy Rolls Royce to drive around in heaven." Ole's friend, the Swede also arrived in heaven. The Swede confessed to cheating on his wife 4 times and St Peter allowed him a moped to drive around ... Ole and his Rolls met the Swede on his moped one day ... "I'm surprised to see you on a moped ... But not half as surprised as when I saw Lena on a skateboard..."

Lena was not feeling well... She went to see her internist who did all kinds of lab work. After the results came back, he called Lena in to his office and pronounced: "Lena, you are pregnant." "Can't be, I'm 80 years old." "Lab tests don't lie ... We even did the Beta HCG test and you are pregnant." Lena was furious and called up Ole... "Ole, you ole fool! You got me pregnant." There was a long pause and a halting voice asked, "Who is this speaking?"

## Hors De Combat

Craig Miller, Professor of Cardiovascular Surgery at Harvard was the UH visiting professor and spoke on "Update on Cardiovascular Aspects and Genetics of Marfan's Syndrome." Italians apparently have a high incidence of Marfan's, and whenever Craig schedules a prophylactic replacement of both the aortic valve and the ascending aorta, huge Sicilian types with bulging topcoats would accompany the patient to the OR to guarantee surgical success... (This reminded us of radiologist Dave Sakuda's experience many years ago ... A Samoan woman had an IVP dye reaction in Phil Lee's office. Dave successfully treated the reaction ... Later he thought he would drop in to see the patient at Queens, but he was confronted by a host of unfriendly relatives who were in a protective mood ... Dave retreated posthaste without even saying, "Hello!"

## Sportsmen

*Conversations with Woody:*

Woody, the Mid Pac golf marshal reported seeing an incredible sight on a Thursday afternoon in February. Herb Takaki, our feisty 91-year-old golfer missed his second shot on the 13th hole and spent the next 10 minutes pounding the turf with his club and shouting blasphemy...

We told Woody how many years ago, Herb was a passenger on a golf cart driven by Paul Tamura ... Paul forgot he had a passenger and made an abrupt left turn on the 9th hole, sending Herb hurtling off and landing on his gluteus ... Herb cussed magnificently as only Herb can with beautiful "F" words ... Fortunately only his pride was hurt...

Woody also related how Tom Oshiro recently had an unusually slow day and several foursomes had to play through ... Woody later saw Tom in the parking lot and decided to lecture Tom on his slow play ... "You should be lucky that Drs. Kawasugi and Ogawa are so patient..." Tom looked up at the towering 6-foot marshal with an angelic smile: "Yes Woody, Yes, yes, Woody..." Woody was so struck by Tom's compliance that he soon forgot his frustration...

* * *

*Physician Winners:* We recently passed the trophy cabinet in the HMA office and learned that certain physicians are repeat winners ... The John Felix Memorial Golf Trophy lists Nobu Nakasone for 1974 and 75 and Mike Okihiro for an incredible 5 years, ie 1976, 80, 81, 83, and 85. The Robert Miyamoto Memorial Trophy also lists Mike Okihiro for 1990. The HMA Tennis Singles Trophy shows Benjamin Chang won in 1977 and 78; Gerald Dericks in '79, 80, and 81; and Gene Doo in '76 and '82...

## Oncology Dialogue

A 68-year-old woman was admitted with an acute MI ... She was found to have a Lt breast tumor which was later resected and found to have mets...

Radiologist David Sakuda presented the mammograms. "This lady had a screening mammogram in December 1989 which was read as negative ... I challenge anyone to locate the tumor in this mammogram ... This is the problem with these thick breasts ... I am tempted to put up a sign: 'We miss 20% of breast Ca's'." Then he put up the mammograms taken 14 months later which clearly showed a discrete lesion ... "This is why we have to screen more than once a year..." Moderator Glenn Kokame teased, "Dave, did you miss the diagnosis in '89?" Dave: "No ... That was at a St Elsewhere General Hospital..."

Glenn reviewed the history: "This breast Ca was diagnosed in September '90, but there was a 3-month delay in surgery because of her acute MI ... Stemmy, did this delay make any difference?" Grant Stemmerman observed, "Very unlikely ... I am involved in at least 3 cases just now ... Obviously the cancer has been there a long time..." Fellow pathologist Larry McCarthy added, "At a recent pathology meeting, the speaker described breast cancer as a systemic disease with distant mets..." Glenn commented, "The patient is Hawaiian, has diabetes and hypertension ... I

don't know about her smoking history..." Stemmy: "Hawaiians have a high incidence of breast and lung cancer, diabetes and MI's ... She hasn't had lung cancer yet."

Glenn turned to radiotherapist Ed Quinlan: "Ed, segmental resection with postop radiation, eh?" Ed commented: "Segmental resection without radiation ... 30 to 35% 5-year recurrence ... With radiation ... 7% 5-year recurrence ... The result with postop radiation is equal to having a radical mastectomy ... All protocols now include radiation..."

* * *

Oncologist Ken Sumida presented the case of a 50-year-old woman with recurrent breast Ca... She had a modified radical for a Lt breast Ca and received adjuvant chemotherapy ... Six months later, a repeat mammogram identified a "round, plump" node in the Rt axilla, but a negative Rt breast. The surgeon dissected the Rt axillary node, which proved to be metastatic adeno Ca... Ken and two other colleagues carefully palpated the thick Rt breast repeatedly without locating any tumor ... The problem was what to do next? Pathologist Grant Stemmerman: "I'm afraid my approach to breast cancer is too radical for you ... I would recommend a bilateral simple mastectomy for even early breast Ca..." Moderator Glenn Kokame: "So you agree with George Peck who recommends bilateral simple mastectomies..." Stemmy: "Yes, but we are alone..." Glenn: "With a positive node and negative chest, bone and liver scans, I would do a modified radical followed by adjuvant therapy, either radiation or chemo..."

* * *

A 47-year-old obese oriental woman had surgery 5 years earlier for a Duke's B colon CA and now presented with metastatic adeno Ca of her Rt liver lobe ... Oncologist Ken Sumida commented that Duke's B has a 50 to 65% disease-free 5-year survival ... Moderator Glenn Kokame added, "The 46-year-old husband has a Duke's C colon Ca and is receiving chemotherapy..." Ken mentioned that the husband also is obese and a heavy beer drinker ... Pathologist Grant Stemmerman summarized the epidemiologic aspect: "Obesity is the single-most consistent factor in colon Ca and beer drinking too... Colon cancer is associated with the obese prosperous, sedentary individual, and the alcohol gives a positive energy balance..." Glenn wanted to know how many beers a day would cause colon cancer...

* * *

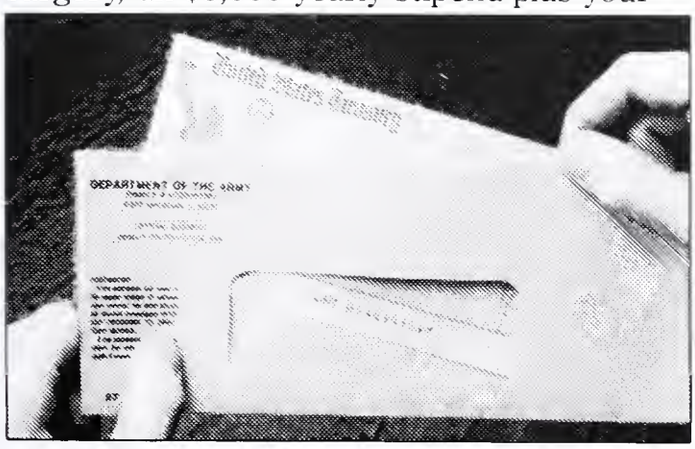
A non-smoking, non-drinking 77-year-old Japanese woman who was on coumadin for pulmonary embolism had bright red rectal bleeding one day PTA ... Colonoscopy revealed a cecal mass ... Liver, spleen scans were negative ... She had a Rt ileocolectomy and a 4 $cm^2$ lesion was excised ... One node out of 22 removed was positive ... Moderator Glenn Kokame: Usually cecal lesions cause anemia with occult bleeding or maroon-colored stools; not bright red bleeding. Perhaps the coumadin contributed..." Oncologist Ken Sumida recalled his internship days ... "When I rotated through surgery, hematochazia of unknown origin was usually a Rt-sided lesion and surgeons often did blind resection of the Rt colon..." Glenn brought Ken up to date: "Nowadays Nuclear Med can localize the bleeding site more precisely with tagged RBCs. Recently I even had a bleeding hemangioma of the jejunum... Dr Wachi, how about chemotherapy?" Oncologist Dennis Wachi stated, "With 1 positive node, the lesion is Duke's C. We can use Levamisole with 5 FU..." Glenn qualified: "Levamisole is an antihelmintic..." Dennis: "The Levamisole-5 FU combination prevents recurrence in Duke's C cases, but not in Duke's B ... We don't know why, and the Levamisole has minimal side effects..." Fellow oncologist Gordon Nakano added that there was no hair loss or other side effects... Glenn reported that cecal lesions develop mets in 25% of cases...

## Portagee Medical Definitions

Artery - The study of paintings
Barium - What you do when CPR fails
Cesarean Section - A district in Rome
Colic - A sheep dog
Coma - A punctuation mark
Congenital - Friendly
Dilate - To live longer
Fester - Quicker
G.I. Series - Baseball games between teams of soldiers
Grippe - A suitcase
Hangnail - A coat hook
Medical Staff - A doctor's cane
Morbid - A higher offer
Nitrate - Lower than the day rate


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## NEWS AND NOTES

*(Continued from page 183)*

Node - Was aware of
Outpatient - A person who has fainted
Post-operative - A letter carrier
Protein - In favor of young people
Secretion - Hiding anything
Serology - Study of English knighthood
Tablet - A small table
Tumor - An extra pair
Urine - Opposite of you're out
Varicose Veins - Veins which are very close together

(From the desk of Ralph B. Cloward MD)

### Miscellany

A lady customer picked up a box of Tampax without a price tag ... The cashier phoned the manager's office ... 'What's the price on a box of large Tampax?' The assistant manager had to look it up and finally called back: 'Is it the kind you use a hammer or simply push with the thumb?' The dumbfounded cashier asked, 'For Tampax?' There was a pregnant pause ... 'Oh, I thought you asked for large thumb tacks...'

(A John Aoki joke related by Larry Yokoyama)

A Hong Kong manufacturer has developed a condom with a chip that bursts out in song when the body fluid hits a certain volume ... A song suggested was "Pop Goes the Weasel."

(Heard on the Johnny Carson Show)

Seat belts are the law in Texas ... A motorist being stopped by a police officer for speeding, hurriedly strapped on his seat belt ... The officer asked, "Do you always drive with your seat belt through the steering wheel?"

(Heard on Paul Harvey News, March 12)

Two friends, Bob and Al were playing golf at the club ... They caught up with two women golfers playing at a leisurely pace ... Bob volunteered: "Let me go up and ask them to let us through..." Before he reached them, he turned back: "Hell! I can't face them ... That's my wife and my mistress up ahead." Al then went up, but also returned a bit flustered: "What a coincidence..."

(Contributed by Bill Dang, our golfing partner)

### Conference Notes

ANXIETY ... Lecture by Vernon Neppe, U of Washington MD PhD and author of "Innovative Psychopharmaco Therapy"

*Epidemiologic Data:* 50 million Americans with symptoms ... 13 million with clinical anxiety ... Only 1 out of 5 receiving treatment (Most patients are not treated with drugs).

Anxiolytic drug therapy indicated for: a) High basal level of anxiety ie frustration and limited coping; b) Adjustment difficulty esp adolescents and retirement age adults ...

*Anxiety* Normal vs Clinical: a) Normal: appropriate reaction; b) Clinical/pathological: generalized state of nervousness with absence of stimuli.

*Terminology:* Anxiety Neurosis of 1970's became Generalized Anxiety Disorders of 1980's and Panic Disorders of late 1980's...

*Psychic Anxiety*: Headaches; disquiet; alarm;

apprehension; poor concentration; rapid fatigue; psychomotor agitation; aimless activity, etc, etc

*Somatic Anxiety:* voluntary muscle tremors; trembling bouts; facial expression, hyperactivity; dilated pupils; frustration; dry mouth; facial pattern; sweating; tachycardia; extrasystoles; precordial oppression; anorexia; gastric discomfort; intestinal spasms; diarrhea; tachypnea; tight chest...

*Continuum of Anxiety:* psychosomatic → functional → somatic anxiety → mixed somatic-psychic anxiety → psychic anxiety → "intellectualization"

DSM III Classification of Anxiety: Organic Anxiety Syndrome; Adjustment Disorder with Anxious Mood; Anxiety Disorder.

*Medical Causes of Anxiety*

A. Common: 1) Caffeine — coffee 150mg, tea 75mg, cola 60mg; 2) Cigarettes — Nicotine-related effects.
B. Endocrine: 1) Thyrotoxicosis — mimics generalized anxiety disorder; 2) Pheochromocytoma.
C. Iatrogenic: 1. Akethesia
D. Drugs of Abuse: 1)Stimulant effects; 2) Withdrawal Syndrome — Alcohol, barbiturates, benzodiazepines...

ANXIOLYTIC DRUGS (Historical)

Alcohol
↘
Bromides
↘
Phenobarbital
↘
Meprobamate
↘
Benzodiazepines
↘
Azapirones

Azapirones: The ideal anxiolytic: a) Effective; 2) Safe; 3) No dependence; 4) No side effects; 5) No drug interaction; 6) Quick duration of action; 7) No sedation; 8) Acts on pathological anxiety; 9) No interaction with alcohol...

BUSPAR (Buspirone): a) Lack of abuse potential; b) Safe with alcohol; c) Lack of withdrawal; d) Lack of dependence; e) Improves cognitive impairment; f) Not a sedative or hypnotic; g) Not an anticonvulsant; h) Not a muscle relaxant...

Special Indications for Buspar: a) Primary care; b) Cancer patients; c) Cardiovascular disease; d) Respiratory disease; e) Nervous Adjustment disorder; f) Psychogeriatric patients; g) Concomittant medication; h) Innovative psychotherapy; i) Drug or alcohol abuse.

Buspar dosage: Range 10-60mg/d. For anxiety: 5mg bid to tid. For aggression: 15mg/d.

Major side effects: dizziness, headaches, nervousness.

*Why do Azpirones take so long? Psychologic impairment takes this long...

## Physicians Speak Up

Richard Frankel, DoH Chief Tuberculosis/

*(Continued)* ➤

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## NEWS AND NOTES

*(Continued from page 185)*

Hansen's Disease Control Branch responded to inquiry: "While the tuberculosis case rate in Hawaii did increase in 1989 and may show a rise in 1990, there has been no increase in the number of cases in children ... There has also been an increase in the tuberculosis-case rate nationally ... There are a number of factors involved in Hawaii: the majority of our cases are individuals who contracted their infection in other countries where tuberculosis is still very common ... There has been no change in the policies of the DoH or the DoE regarding tuberculosis clearance. Such clearance is required of all children entering school, not merely immigrant children ... (Tine test by private physicians or a standard skin test by the DoH tuberculosis program) ... Our requirement for screening children is the most stringent of any state..."

When Dr Andrade described marijuana "as a deadly threat to the staff and the source of violence at the Hawaii State Hospital, psychiatrist Blase Harris wrote: "I have worked at the State Hospital, witnessed violence there and have been a victim myself when attempting to treat patients, marijuana was never involved..." "To attribute the complex problems at the hospital to marijuana would be rather foolish if one were actually trying to make the environment safer for both the staff and patients. To call for a scientific investigation into the actual causes and extent of violence there would be more professional..."

Mark Dillen Stitham, immediate past president of Hawaii's Psychiatric Medical Association was critical of Senator Inouye's endorsement of psychologists writing prescriptions ... "Your article 'Inouye backs psychologists' (8/16/90) should more properly have been titled: 'Inouye backs lower medical standards.' Medicine is more than learning how to write a prescription ... First one has to know how to diagnose medical illness ... That's why the training of a psychiatrist is in both body and mind ... Psychiatrists must learn anatomy, histology, pathology, microbiology, physiology, obstetrics, surgery, cardiology, etc ... All this takes a rigorous 4 years to get the MD degree; then 4 years of supervision over dozens of patients as a resident ... There can be no shortcuts if the public health is to be safeguarded ... Sen Inouye seems bent on lowering those standards and deserves castigation ... This past session, our Legislature wisely defeated bills to allow non-physicians to prescribe ... As Ben Franklin observed, calling an ox a bull does not make it so ... Neither does calling a psychologist a 'physician' after one year ... Psychologists already have a training program available to them ... It's called medical school..."

### Annual Accupath Golf Tournament

(Hawaii Kai Golf Course, March 7, 12:30 pm starting time)

With freezing gale winds and thundering showers blanketing the island in the morning, surely the afternoon tournament would be cancelled, we thought ... We drove reluctantly out to Hawaii Kai where happily the sun was out and the gale winds were subsiding ... The announced format was: winter rules and discard one bad score ... At day's end, the surviving physician winners were as follows: First Place — Neal Shibuya with an incredible net 56 ... Coolidge Wakai and Sam Waxman with net 61s ... Fred Lam and Bill Dang

with net 62s ... CM Lum with net 63 ... Gordon Chang and SY Liao with net 64s; Francis Soon and Herb Uemura with net 65s ... Herbert Nam, Jim Navin, Henry Fong with net 66s ... Closest to the pin on the 10th Hole was Jim Navin (who nosed out H Yokoyama's lucky 15-footer). Well, even the non-winners went away happy because there were enough door prizes for everyone present at the post-tournament gourmet dinner ...

## Conference Notes

*"Type II Diabetes"* - Another excellent lecture at Mabel Smyth (8/10/90) by John Gwynne, endocrinologist and VP ...

"Diabetes is the most challenging and frustrating situation we encounter in daily practice . . . Diabetes is a serious illness a/c multiple complications . . . Early intervention and amelioration of complications is critical . . . 6% of the U.S. population has diabetes . . . It cost $20 billion in the US in 1987 ... Early diagnosis and treatment can reduce morbidity and mortality ..."

*Prevalence* of Type II Diabetes: related to obesity and heredity.

*Microvascular Complications* (eye, kidney and nerve complications): Diabetes is the leading cause of blindness . . . After 25 years, 20% of diabetics have retinopathy . . . After 20 years, 5 to 10% of diabetics have renal disease. . .

*Cardiovascular Mortality:* 2-to-3-fold risk in diabetics ... ie CHD, CVA, IC (intermittent claudication)

*Diabetic Complications:* 4% opthalmologic; 6% renal; 9% neurologic; 77% CV. . .

*Screening for risk of diabetes:*

| FPG | Significance | Action |
|---|---|---|
| 115 | Normal | Retest in 3 yrs. |
| 116-140 | Suspicious | Additional testing; check risk factors |
| 140 | Diabetes likely | Confirm by 2nd FPG; treat diabetes |

*Ddx Type I and Type II*

Hx ketoacidosis; age of onset; weight, family hx; C-Peptide

*Associated Disease* (secondary causes): Pancreatic disease, endocrinopathies; drug induced; Systemic/Hereditary

*Pathogenesis of Type II:* Heterogenous disorder characterized by: a. deficient insulin secretion; b. insulin resistance/activity

A. *Secretory:* loss of first-phase insulin release; diminution of insulin level

B. *Insulin Resistance:* higher insulin levels; increased insulin requirement; (SSPG) Steady state plasma glucose; decreased number of receptors

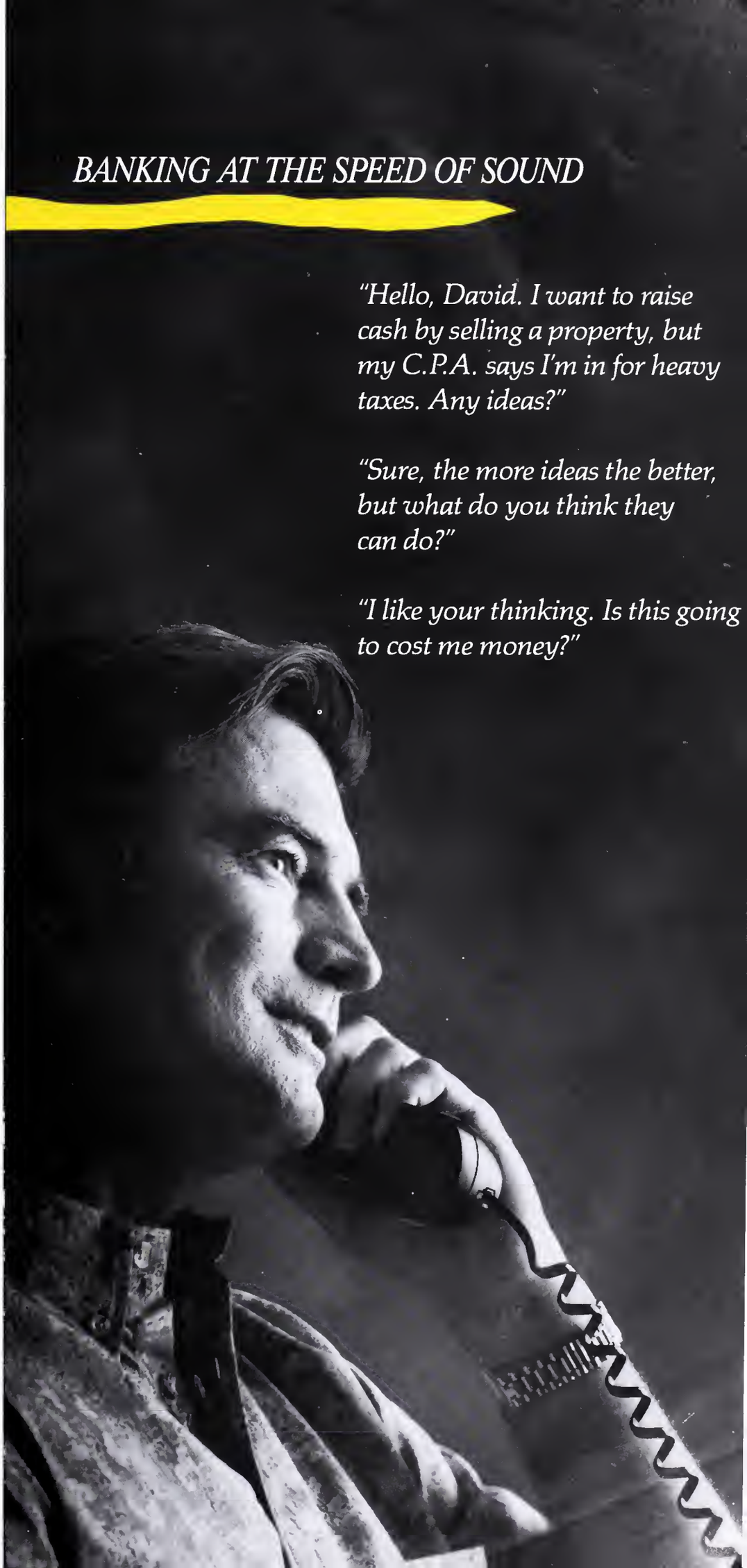
Receptor or post receptor defects: a. decreased number of receptors; b. defect in post receptors: loss of maximum responsiveness. . .

*Treatment of Diabetes:* a. Blood glucose control with diet, exercises, OHA, insulin; b. Prevent complications: risk factor management, hypertension control, periodic ophthalmic exams, foot care.

*Prevention microvascular complications:* No dramatic results from various trials; Pancreatic transplants: no dramatic results in retinopathy, renal morphology, neuropathy. . .

*Diabetic Diet:* a. Caloric restriction is most valuable; b. CHO: Increase CHO to 50-55%;

*(Continued on page 190)* ➤

PRIVATE FINANCIAL SERVICES

*"Bill, for this one I'd like to bring in Hawaiian Trust."*

*"It's possible to get access to your money without paying any taxes. Let's say lunch, tomorrow? With your C.P.A."*

*"Hawaiian Trust's first consultation is free, and lunch is on me!"*



# Maka O Ka Kauka

Russell T. Stodd, MD

**The efficiency of a group meeting is inversely proportional to the number present and the time spent.**

The March meeting of the HOS brought forth a discussion from our Councilor, Dr. Shigemi Sugiki, that the AAO Council was expanding to unwieldy size due to the inclusion of representatives from subspecialties within ophthalmology. Like the AMA House of Delegates, the AAO Council is becoming inhibited by duplicating groups, excess discussion, and delayed or belabored action. Therefore, the HOS resolved that Dr Sugiki carry the message back to the Council that representation should be limited to general membership societies, and subspecialties be excluded. To be sure, the Council and the AMA House already have such representation through their general delegates. The resolution may have little chance before the Council of the AAO, but the message will be there.

**Nothing is ever accomplished by a reasonable person.**

Former Governor Lamm of Colorado says that health care has become an economic cancer, and the stage is set for reform — but reform to what? The Governor that the states (not the Feds), must take the initiative and begin by reforming.

1. The malpractice system — It is costly, does not compensate a majority of injured patients, and drives defensive medicine.

2. Bureaucracy — Studies show that over 30% of our health-care dollar goes to bureaucracy, far more than is spent in other systems.

3. Medical technology — We have too much duplicating and superfluous medical technology, and we use it much more than other systems. The Governor did not repeat his remarks of 5 years

ago ("We have a duty to die.") in reference to our national expenditures for the elderly and terminally ill.

**If a study is useless, it will have to be documented.**

Unbelievably, the CDC's National Center for Health Statistics in consultation with the FDA, has just put out a study claiming that 20% to 50% of all implantable medical devices cause complications, and lists IOLs in 50% area. Such a figure is so manifestly erroneous that the entire study must be flawed. Supposedly, patients complained of difficulty with healing, infection, bleeding and blood clotting, and IOL patients complained of blurred vision. The "study" was a household survey with no medical corroboration, and no indication of duration nor severity of complaint. HHS Assistant Secretary James Mason stated that the FDA will look at the study and "work with physicians and manufacturers to prevent problems and adverse effects." Perhaps the FDA should also work with those who design and orchestrate studies which yield absurd findings.

**A brave endeavor, to do thy duty.**

Life can get pretty hectic for emergency room physicians. In Omaha, a police officer asked the doctor to draw blood immediately from a suspected drunken driver, but the on-duty physician first attended to patients needing urgent care. After 45 minutes, the officer handcuffed the doctor and took him downtown for booking on a charge of obstructing justice.

**Information deteriorates upward through bureaucracies.**

Logically, for economic and other reasons, freestanding surgicenters are edging further and further into hospitals' territory. The SMG Marketing Group reports that centers now account for almost 25% of outpatient surgeries, up from 10% just 6 years ago. More than 1,200 freestanding centers now do business, an increase of 30% in the last 12 months. SMG analysts expect that growth will continue for at least two more years — and all such Medicare expenditures are under part B, and therefore are attributed to those porcine

*(Continued)* ➤

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**MAKA O KA KAUKA** *(Continued from page 189)*

doctors lining their pockets while wallowing in the Medicare trough.

**It's a dog-eat-dog world in medicine these days, and cataract surgeons are wearing milkbone underwear.**

If there was ever any doubt about Ms. Wilensky's cataract PPO project, consider this. HCFA has negotiated 3-year coronary artery bypass graft (CABG) demonstration contracts at *global* rates significantly below what Medicare ordinarily would pay hospitals and surgeons for bypass procedures. Four hospital teams, Ohio State University Hospital, St. Joseph's in Atlanta, Boston's University Hospital and St. Joseph Mercy Hospital in Ann Arbor, Michigan, all have underwritten comprehensive programs at *savings to Medicare of from 5 to 30%*. The reduction is comparable for both hospital and surgeons. Patients will receive only one co-pay bill or often no bill. The centers expect that the contracts will provide competitive advantages to offset the discounts.

**Practical politics consists of ignoring facts.**

Despite the Congressional testimony offered before Senator Levin's committee, and despite the Reader's Digest story about the corrupt cataract surgeon, the Office of the Inspector General of DHHS's study about the quality of care for outpatient cataract surgery, revealed that cataract surgery is statistically safer, less often complicated, and has a much lower rate of unnecessary surgery than the national average of all medical procedures. Unnecessary surgery for all medical procedures was found to be 9%, cataracts 1.7%. Poor quality of care for the national sample of all medical procedures was 6.6%, cataracts 1.8%. Additionally, the above data revealed no significantly statistical difference between high and low volume surgeons. So, if there is anything to absorb in these figures, it would seem to be that ophthalmologists need not explain further the expenditures for cataract surgery. Furthermore, this should put an end to unwarranted accusations and political infighting within our specialty. Instead, we should all be advocates for modern, cost-effective lens implant surgery which saves both vision and tax dollars.

**The American people aren't interested in details.**

A study sponsored by Northwestern Life Insurance Co. shows that 92% of respondents said health-care costs are out of control. However, 9.4% said that health-care services should not be limited by the individual's ability to pay, and should be available to all. This would seem to enforce a previous finding that Americans are not so unhappy with their health care, but they do not want to pay for it, nor accept rationing.

**Addenda —**

— The blindspot was discovered in 1668 by Marriote.

— During the Middle Ages, King Johann of Bohemia was treated for high myopia by an oculist. When the treatment failed, he had the physician sewn into a sack and drowned in a river.

— Try every experience once, except incest and folk dancing.

— The way to fight a woman is with your hat. Grab it and run.

Aloha, and keep the faith.

rts

**NEWS AND NOTES** *(Continued from page 187)*

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# Hawaii Medical Journal

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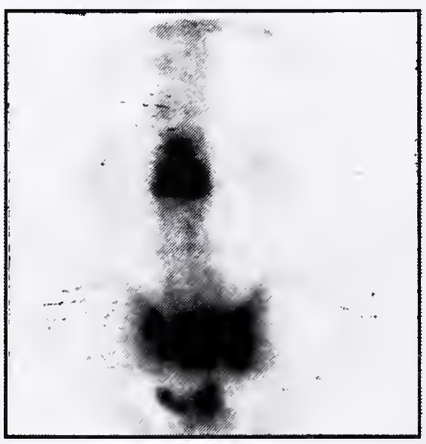
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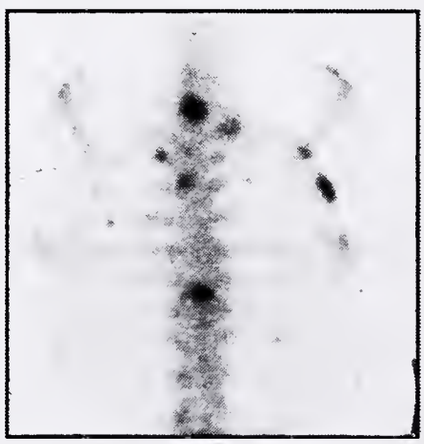
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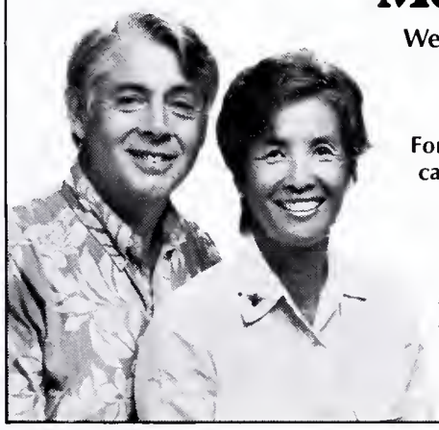
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# Look carefully at sashimi

Anisakiasis should be one of the more common afflictions in Hawaii, considering the amount of raw seafood consumed by our people.

The *Journal* had an extensive review article on the subject in its January 1991 issue; however, we cannot resist publishing a follow-up.

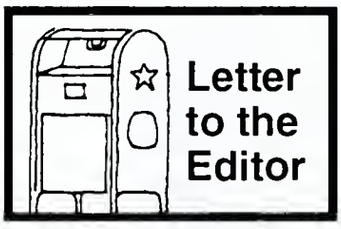
JABSOM student Joy Hiramoto, who is about to receive her MD and graduate from the school, produced the article in the current issue under the aegis of Jinichi Tokeshi.

Not only was the diagnosis remarkable in that the patient made it (he was a physician, after all!), but we would like to challenge any of our readers to find that worm on the photocopy of the film.

Sorry, there is no monetary reward for doing so.

And, what did happen to the worm?

J. I. Frederick Reppun MD
Editor




# A response

To the Editor:

On behalf of Papa Ola Lokahi (POL), I would like to express our appreciation for the editorial in your November 1990 (Vol. 49, No. 11) issue of the *Hawaii Medical Journal,* bringing the attention of your members to our efforts to improve the health of Hawaiians through the Native Hawaiian Health Care Act (Public Law 100-579) (hereinafter referred to as "the Act").

We also appreciate the editorial's closing statement that "the Hawaii Medical Association (HMA) is willing and able to help *Papa Ola Lokahi* whenever we are asked to do so." I have in fact met several times with your Native Hawaiian Committee over the past year and a half and will identify what other actions the HMA might take. First, however, I would like to respond to some of the specific assertions contained in your editorial.

First, on your editorial's statements that POL has "only 5 members," and that "(n)otable in an organization that is to plan health care is the absence of a physician (not even a *Kahuna Lapaau!*/Ed)." POL is an organization created by the Act, and is statutorily determined as being comprised of the 5 organizations listed in your editorial: Alu Like, Inc., E Ola Mau, the Office of Hawaiian Affairs, the Office of Hawaiian Health of the State Department of Health and the University of Hawaii. We have 2 health professionals on the Board. The representative from the Office of Hawaiian Health of the State Department of Health is Fern Clark, the Office's Director and a nurse; and E Ola Mau's representative is Nanette Judd, its president and also a nurse.

As for "the absence of a physician," I am POL's Executive Director and am a physician as well as a lawyer. As for "an organization that is to plan health care," I also chair the Long-Range Planning Committee of the John A. Burns School of Medicine.

More importantly, 3 of the 5 Native Hawaiian planning committees that have been established are chaired by allopathic physicians, and all are Hawaiians and graduates of the John A. Burns School of Medicine. They are R. Wayne Fukino MD, of Kaua'i, Noa Emmett Aluli MD, of Moloka'i, and Joseph Kamaka III MD, of Maui. The co-chair for O'ahu is Mitchell Eli DC.

Second, your editorial states that "the total appropriation is $2.6 million the first year, $6 million the second year and $11 million the third year," and also states that "Federal funds became available in FY 90, ie in October 1989, initially for *Papa Ola Lokahi's* organizing and planning process to the tune of $100,000 for its administrative effort and $700,000 for the development of the Master Plan." One might infer from these statements that POL has chosen to spend only $800,000 of $2.6 million in the first year in which funds became available.

In the legislative process, when a law is enacted, this *authorizing* legislation specifies the *maximum* amount of funds that can be made available in each year. As each new fiscal year approaches, the legislature specifies the amount to be actually *appropriated.* In the first year, $2.6 million was *authorized,* not appropriated; similarly, in year two, the authorized amount was $6 million, and in year three, $11 million. Appropriations seldom, if ever, equal the authorized amounts. In the first year, $800,000 was the amount actually *appropriated* by the U.S. Congress, compared to the authorized amount of $2.6 million. Our fiscal year 1991 appropriations are $2.7 million, out of an authorized level of $6 million. Of the $2.7 million appropriated, $2.3 million is for initiation of services, to be applied for and granted to each island's Native Hawaiian service delivery system. The remaining $400,000 is

*(Continued on page 198)* ➤

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for POL's various activities.

Additionally, the $2.6 million in authorizations for the first year were specified for the following purposes: a) $700,000 for development of a Master Plan, b) $900,000 to plan for up to 9 health systems throughout the state, and c) $1,000,000 for all other POL responsibilities. As your editorial states, our actual appropriation was $800,000; but in addition to POL's organizing and planning, and development of a Master Plan, these funds were also to cover the costs of planning the health delivery systems. We have allocated $525,000 of the $800,000 to planning of these systems.

The $800,000 did not become available in October 1989. That was the *beginning* of the 1990 federal fiscal year. We received instructions from the federal government for writing our grant proposal in April 1990; we responded by the end of that month and were notified of acceptance of the proposal and received our first payment of the $800,000 in July 1990. We were fortunate in being able to start our initial activities in July 1989 with $200,000 that the Hawaii State Legislature provided. (For a more detailed explanation of the funding history, please see the December 1990 issue of the Office of Hawaiian Affairs' newsletter, *Ka Wai Ola O Oha*).

Third, we are acutely aware that "the (master) plan (should) meld into the existing health care system, especially with the introduction of the State Health Insurance Program (SHIP) enacted into law by the Hawai'i State Legislature earlier this year."

To quote from the summary of the Master Plan document which we distributed in November 1989 and which your editorial states that Dr. Mills has studied in-depth:

> "In addition to the health services provided under the Act, there exists and will continue to be a need for other State, Federal, and private efforts directed at improving the health of Native Hawaiians. Therefore, *a comprehensive health-care master plan must take these other resources and services into consideration,* and the following objectives must be met in order to address the health needs and improve the health status of Native Hawaiians: 1) assessing the health status and health-care needs of Native Hawaiians living in Hawai'i; 2) planning and establishing the resources and services that are called for under the Native Hawaiian Health Care Act; 3) *identifying and evaluating all other current and planned health resources and services for Native Hawaiians;* 4) *coordinating these various resources and services;* and 5) developing monitoring and evaluation systems in order to improve and create health resources and services and to measure progress toward improving the health of Native Hawaiians (emphasis added)."

As for SHIP, you can be assured that we are well aware of the interrelationships between the Act, SHIP and our Master Plan. I represented both POL and the School of Medicine on the SHIP committee advisory to the Department of Health throughout the Department's planning and implementation of SHIP.

Fourth, your editorial states that "*Papa Ola Lokahi* would do well to avoid discrimination in reverse to raise its ugly head." This is accompanied by a warning to POL that "the matter of establishing primary health-care centers ... smacks somewhat of establishing another tier of health care ... ie of a different quality. This is not desirable. However, if this mandate in the Act can be stretched to allow Health-Care Centers or Organizations to farm out services to existing primary care facilities, then it might not be so difficult to implement the Act."

Services under the Act will be under the management and control of Hawaiians, and planning is being conducted under the direction of Hawaiians, who are striving to create health services that are special and uniquely Hawaiian. There is no need to lecture POL and the island planning committees in such patronizing language.

Furthermore, the mandate of the Act need not "be stretched" to achieve this purpose. In fact, our plans for providing primary care (the 3 broad service areas under the Act are primary care, health promotion and disease prevention) are quite similar to the editorial's hopes, although I would not characterize these primary care services as being "farmed out." We want the beneficiaries of the future Native Hawaiian systems to have a choice, and we want providers of services to be sensitive to the culture and style of Hawaiians.

This brings me to the identification of actions that the HMA could take to assist in realizing the objectives of the Act.

As stated earlier, I have had several meetings with the Native Hawaiian committee of the HMA, which was first chaired by Dr George Mills, and now by Dr Ernest Bade, who is also president of your Hawai'i County Medical Society. Dr. Bade attended the most recent meeting of the Hawai'i Island Planning Committee on November 26, offering your Association's assistance. Previously, at an August 8 meeting between your committee and myself, we discussed ways of directly involving more physicians in the island planning committees. I subsequently wrote a short article for your newsletter, describing our efforts and asking physicians to contact POL if they were interested in participating in the planning activities on their respective islands. We received only a single inquiry, from a physician on Maui. So we need to explore other ways of getting more of your members interested in direct participation.

Finally, we do not want to limit our beneficiaries' access to "existing primary care facilities" to those providers who serve primarily the economically disadvantaged and medically underserved. We want to avoid placing our beneficiaries not only in "another tier of health care," but also in the lower tier of current services.

One of the requirements of the Act is that our systems and those providers to whom services are "farmed out" must be participants in Medicaid. Thus, *the most important action the HMA could take* in helping "to avoid discrimination in reverse to raise its ugly head" *is to encourage your members to increase their participation in the Medicaid program.* Let us not be satisfied in this undertaking until Native Hawaiians have access to the services of all physicians in Hawai'i.

Lawrence Miike MD JD
Executive Director
Papa Ola Lokahi
Kawaiaha'o Plaza, Suite 102
567 So. King Street
Honolulu, Hawai'i 96813

The editor responds:

We bid Dr Miike's pardon in failing to recognize his status as a physician and a lawyer. We are also appreciative of his clarifications.

J. I. Frederick Reppun MD
Editor

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# Highlights of the HMA Council Meeting — May 3, 1991

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• Larry Hart was introduced to Council. He recently joined the DoH to work with the Medical School in coordinating services to the public.

• President John McDonnell, with assistance from President-elect Steve Wallach, told of the 3-day Washington DC trip as part of California Medical Association's annual visit with Congressional representatives. Western states: Hawaii, Alaska, Washington, Idaho and Oregon were invited to participate with California. Meetings were held with members of HCFA and Hawaii members of Congress, including former Hawaii Congress member Pat Saiki, who is the recently appointed chair of the Small Business Administration.

• The Senior Physicians Committee recommended that HMA investigate the pros and cons of a proposed Long-Term Care Financing Authority and, in the event it is authorized, that at least one, but preferably more, practicing physicians be appointed to serve on the Long-Term Care Financing Board and planning committee. The physician who is appointed to the Board should be practicing primary care actively in Hawaii, should be involved in long-term care, should be a member of the HMA and to serve as a liaison with organized medicine. It also recommended that the HMA be used as a consulting base whenever possible.

• An HMA policy statement was approved: Laser surgery or other invasive procedures using lasers for medical purposes should be done only by appropriately trained physicians.

• A new HMA membership benefit was approved. This benefit will allow HMA members to purchase medical office supplies from Galaxy Business and Medical Products, Inc. at approximately an 18% discount from the retail prices.

• Three resolutions to be submitted to the AMA Annual Meeting of the House of Delegates in June were approved. 1) It asked the AMA to work with the American Bar Association to promulgate guidelines for the role of an expert witness; 2) it asked the AMA to take appropriate action to alert the public concerning the Philip Morris Company's use of a nationwide Bill of Rights Tour which focuses on America's youth in advertising tobacco products; and 3) it asked for the AMA Council of Medical Education to reconsider the new mandated Category II credits for the Physicians Recognition Award and to return to previous regulation.

• Steve Moser of Maui, Chair of the HMA Environmental Health Committee, requested HMA's help in alerting all county medical societies and their officers about the likelihood of contamination with lead (P6) in any water catchment systems in their respective counties. The recommendation was approved.

Andrew Don, MD
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# Anisakiasis in Hawaii: A radiological diagnosis

Joy T. Hiramoto MS IV *
Jinichi Tokeshi MD**

*Human anisakiasis, an increasing medical problem in Japan, was recently identified in 7 people in Hawaii[1]. We report an 8th case occurring in an individual who had consumed a large amount of raw squid sushi at a restaurant. The diagnosis of anisakiasis in this patient was made after the parasite was identified by X-ray. To our knowledge, radiographic demonstration of the anisakiasis parasite has not been reported in Hawaii previously.*

**Introduction**

Infection by the nematode anisakis in humans was first reported in 1960 by Thiel[2]. Since that time the incidence of anisakiasis has increased, especially in Japan, where numerous new cases are reported each year. In Hawaii, 7 cases have been reported, the diagnosis made by the endoscopy and the radioallergosorbent test (RAST). The lifecycle, diagnosis, treatment, and overall management of infection with anisakis was extensively reviewed by Deardorff, Kayes and Fukumura[1].

In brief, Anisakis is a nematode that commonly infects the gastro-intestinal tract of marine mammals, after these mammals have ingested the infected flesh of fishes or crustaceans[1,3,4]. Humans can also become infected after eating the raw flesh of infected fishes such as salmon, mackerel and rockfish (red snapper). Infections have also occurred after eating raw squid[1,4,5,6].

Typically, a patient may present with severe, intermittent epigastric pain 1 to 12 hours after eating such food. Nausea, vomiting, diarrhea and urticaria may or may not ensue. Fever, leukocytosis with or without eosinophilia, and occult blood in the stool may also be present in some cases[1]. Symptoms may mimic acute gastroenteritis, food poisoning[5], appendicitis, cancer, ileitis, TB peritonitis, cholecystitis[8] and Crohn's Disease[9].

Diagnosis can be made radiographically by actually seeing the parasite on film. The presence of broad gastric folds, bowel edema[10,11], or widening of the gastric angle, in symptomatic patients with a history of consuming seafood can also suggest anisakiasis[4,5,6,11]. However, the diagnosis is usually made by endoscopy and/or RAST[1,12,13].

Treatment consists of endoscopic removal of the worm, in addition to symptomatic management[1,4,5,6].

Complications of severe anisakiasis include intussuception with intestinal obstruction[7], severe ascites, penetration of the bowel wall by the juvenile form[9] or ileus[8]. Anisakiasis has also been linked to the formation of an eosinophilic, granulomatous, gastric tumor[14]; the worm has also been reported to have migrated into the mesentery, the pancreas[8] and the liver[9].

Infections by anisakis can be prevented if raw items are cooked or blast-frozen prior to consumption[1,3].

**Case report**

A 33-year-old physician was seen in the office with a chief complaint of intermittent, sharp, non-radiating epigastric pain 3 hours following consumption of a large amount of raw squid at a sushi bar. The pain was accompanied by diaphoresis and nausea, but no fever or vomiting.

Past medical history and family history were not remarkable, and the patient denied being on any medications. Social history was significant only in that alcohol was imbibed infrequently. Review of symptoms was non-contributory.

On physical examination, the vital signs were: BP 130/88 P 84/min, T 99°F. Examination of the abdomen revealed mild tenderness to deep palpation in the epigastric region. Guarding, rigidity, and rebound were not present; bowel sounds were normal. Rectal examination was unremarkable; the stool was brown and guiac negative. The rest of the examination was not remarkable.

Laboratory data revealed a WBC of 11.1 with a normal differential.Eosinophilia was not present. The Hgb was 16.1, Hct 46.6, platelets 189,000, BUN 15, Creat 1.0, SGOT 25, SGPT 41, GGT 54 and total Bilirubin 0.8. An upper GI series was obtained. The initial reading reported no abnormalities. The patient was treated symptomatically and left Hawaii the same day. He later reported spontaneous resolution of the symptoms within 24 hours. No further followup seemed necessary, therefore.

The patient, being a physician, reviewed the upper GI films and found a 0.5 mm x 2 cm thread-like, radiolucent, filling-defect partially surrounded by a pool of barium in the body of

* Medical Student IV,
John A. Burns School of Medicine
** Assistant Clinical Professor of Family Practice,
John A. Burns School of Medicine

Reprints available from:
Jinichi Tokeshi MD
1451 South King Street, Room 209
Honolulu, Hawaii 96814

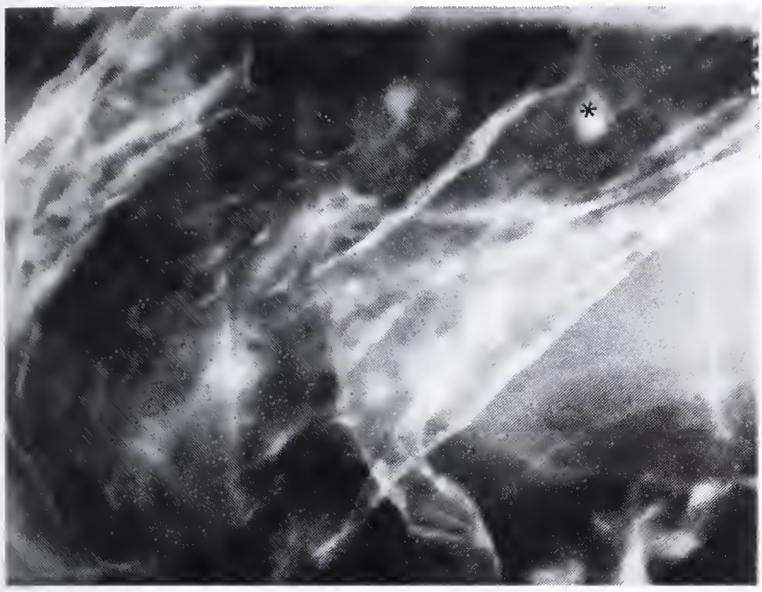


FIG. 1 — X-ray photograph of the nematode Anisakis in the wall of the stomach. The parasite appears beside the asterisk as a serpiginous 0.5 mm x 2 cm filling-defect. Note the small pool of barium, representing the site of attachment, partially surrounding the worm.

the stomach (Fig. 1). A surgeon by profession, the patient immediately made a diagnosis of anisakiasis based on his clinical experience with similar infections in his own patients. He returned to Hawaii approximately 2 months later and brought up his case for discussion by his peers. Consequently, a corrected diagnosis of anisakiasis was made.

**Discussion**

This case, in which the patient made the diagnosis, emphasizes the need for greater awareness by physicians concerning anisakiasis. No further workup, such as endoscopy or RAST, was necessary on this patient because his symptoms resolved within 24 hours; the upper GI X-ray was read as "normal" and anisakiasis was simply not suspected.

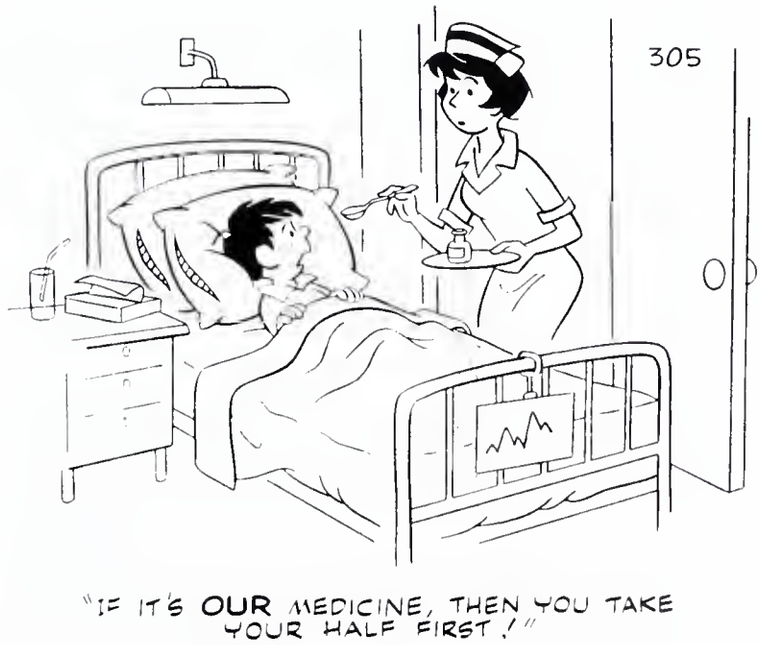
Since then, we have discussed this case with several local radiologists. They also read the X-rays as normal and were surprised that the nematode could be seen on film. However, the thread-like filling-defect, surrounded by a small pool of barium (the site of attachment by the worm), that can be seen in this patient's films is what is frequently demonstrated in Japan. In one Japanese study of 130 patients, thread-like filling-defects in circular or ring-like shapes were seen in 47.7% of patients with gastric anisakiasis[6]. Sugimachi et al[6] also interpreted the small, round collection of barium associated with the thread-like filling-defect as the parasite's site of attachment to the mucosa. Nakata et al[5] reported the same kind of serpiginous, thread-like filling-defect in 31 of 41 patients (76%) studied. Other workers have also been able to demonstrate this in the small bowel[11] and in the large bowel[10].

Residents living in Hawaii have many opportunities to sample new seafood dishes in the home or at local restaurants. Although relatively few cases have been reported locally, it is quite likely that such infestations have gone undiagnosed[1]. The radiographic evidence of the presence of anisakis, for example, is subtle and easily overlooked, and the edema in the stomach or bowel which may occur could also be caused by other gastrointestinal diseases. As a result, endoscopy with or without RAST would be more useful than X-ray to confirm the presence of the anisakis. However, if the parasite is apparent radiographically, this finding may obviate invasive procedures (eg exploratory laparotomy for a diagnosis of acute appendicitis) and aid in the overall management of the patient's illness.

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■



# Sarcoidosis: A Hawaii rarity

Jonathan Charles MD*
David J. Elpern MD**

*Sarcoidosis is so rarely seen in residents of Hawaii that it may not be considered as a diagnostic possibility. The differential diagnosis is more complex in Hawaii due to the presence of granulomatous diseases such as tuberculosis and leprosy. We present the first known case of sarcoidosis in a Hawaii resident together with an overview of the disorder.*

## Introduction

Sarcoidosis is a noncaseating, granulomatous disease which can affect virtually any organ system. A high percentage of patients undergo spontaneous resolution.

Sarcoidosis is common in certain areas of the U.S. and its clinical presentation is well known to most physicians there. The disease is rare in Hawaii and, therefore, may not be easy to diagnose at first glance. Complicating the diagnosis is the fact that other entities in the differential diagnosis are far more prevalent in Hawaii than on the Mainland. For instance, more cases of leprosy and Mycobacterium tuberculosis are seen in Hawaii, yet on the Mainland these diseases are rarely seen. In addition, granulomatous reactions to plants (particularly cactus and bromeliads), insects and sea urchins are commonly encountered in Hawaii and may simulate sarcoidosis.

We recently diagnosed the first case of sarcoidosis occurring in a long-standing resident of Kauai. The clinical findings were subtle and the diagnosis was not immediately obvious.

## Case report

A 40-year-old woman presented to one of us (DJE) with small, somewhat painful nodules on the extensor aspects of both forearms that had been present for 4 months.

The patient was born in Portugal, where she had resided for the first 16 years of life; thereafter she lived in Mozambique. Later on, she emigrated to Kauai, Hawaii, where she has resided for the past 13 years.

The patient's past medical history was unremarkable. She was a para III, the last pregnancy having been in 1982, at which time she had undergone an elective bilateral tubal ligation. She had had a similar skin eruption on both forearms in 1988 which had resolved in 4 months. At that time, a chest X-ray was normal (Fig. 1).

The patient and her husband are farmers. Two months prior to her presenting herself to us, several red, tender nodules appeared on the anterior aspects of both lower legs. They disappeared in a few weeks. There were no other symptoms, specifically no respiratory difficulties and no visual complaints.

The physical examination was remarkable for several erythematous, flat-topped papules and plaques measuring 2 to 15 mm in diameter, arranged in an almost symmetric fashion on the extensor surfaces of both forearms. A barely visible circinate lesion measuring 8 cm in diameter was present over the anterior surface of the lowermost portion of the right leg.

A 3 mm punch biopsy of one forearm lesion revealed closely-packed, noncaseating epithelioid granulomas confined primarily to the upper dermis (Figs. 3, 4). The granulomas were bordered by a moderate lymphocytic infiltrate. A few multinucleated giant cells were present, including a rare Langhans cell. Birefringent particles were not identified under the polarizing lens. Fungal elements were not identified with the PAS stain and the AFB stain was negative. These findings were interpreted as consistent with sarcoidosis. However, neither leprosy nor a foreign body reaction (including to cactus

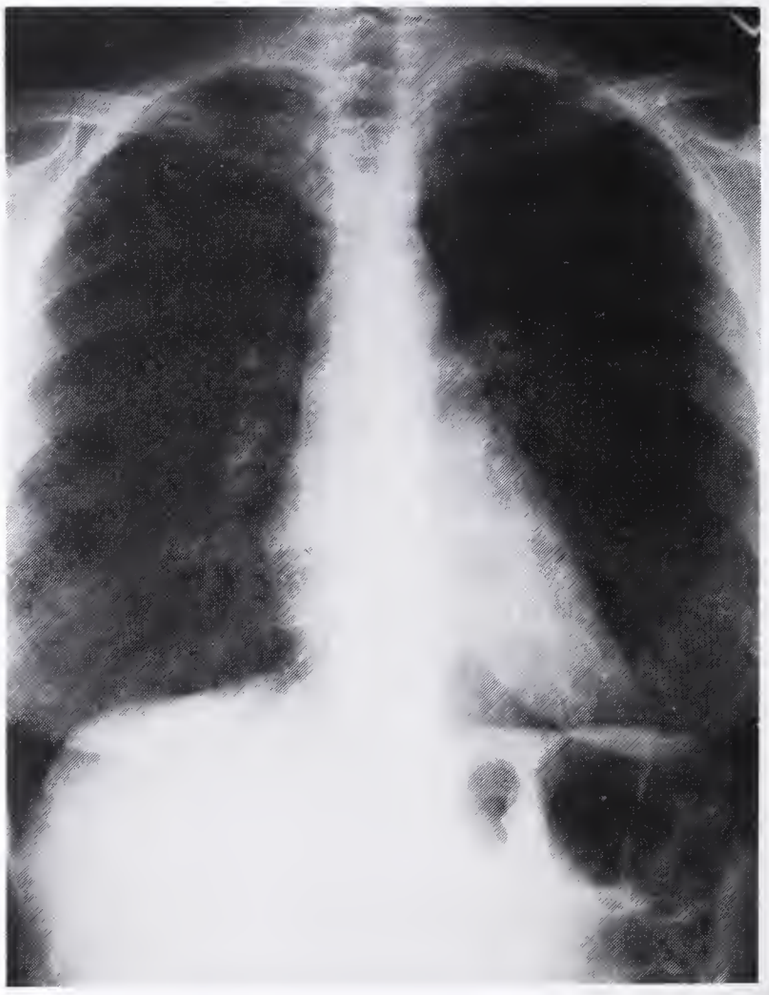


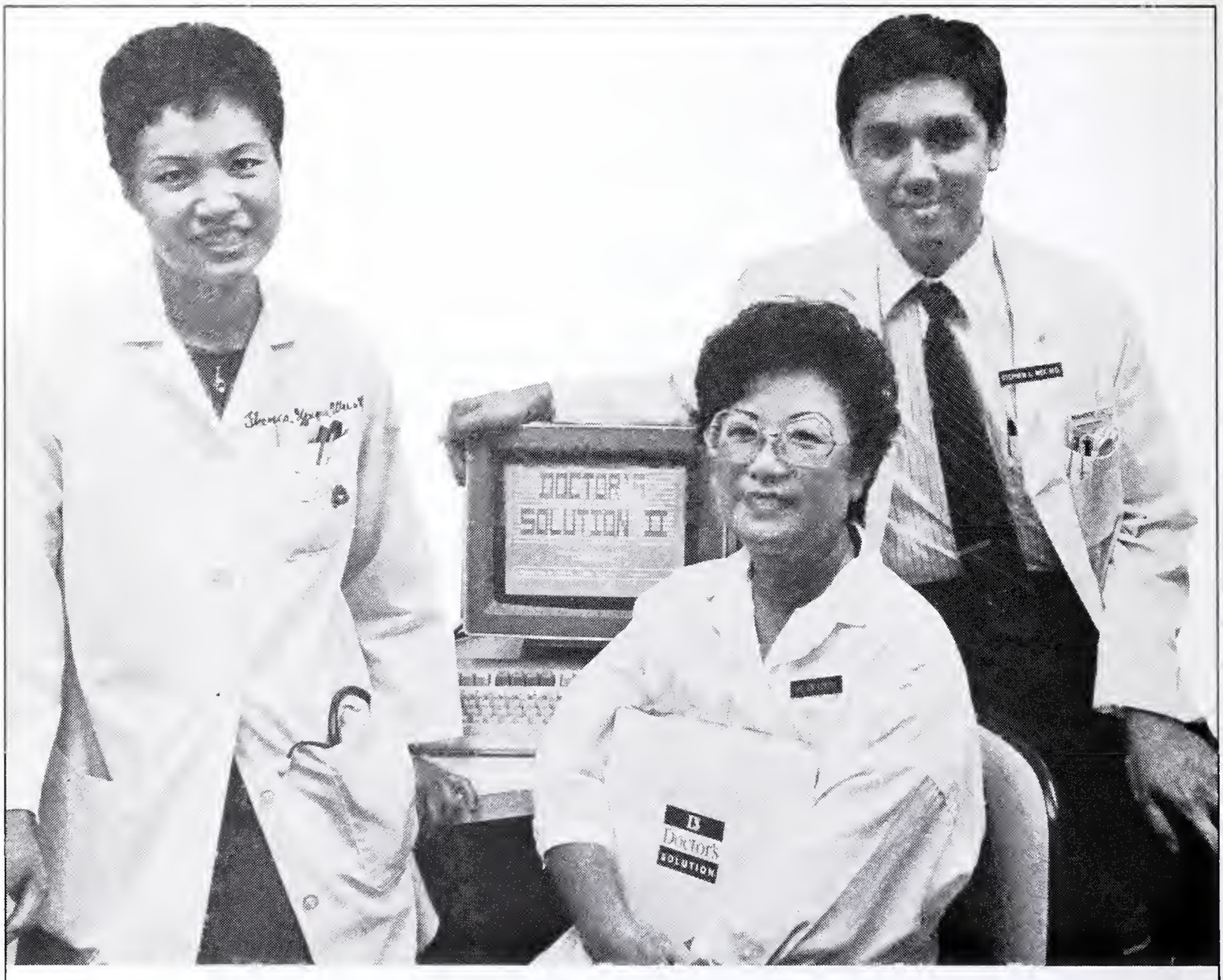
Fig. 1 Normal baseline chest X-ray, 1988.

* Pathologist
Kauai Medical Group
** Dermatologist
Kauai Medical Group and Wilcox Memorial Hospital
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and similar plants, sea urchins, and insect bites) could be ruled out by histologic methods alone.

A chest X-ray revealed prominent, left hilar adenopathy and possible right hilar adenopathy as well (Fig. 2). Pulmonary function tests were normal; sputum culture was negative.

Laboratory studies (including calcium), urinalysis, and CBC were all within normal limits. Angiotensin Converting Enzyme (ACE) was 10.4 activity units (normal 2.0-7.5).

The patient was diagnosed as having sarcoidosis and no specific treatment was offered due to the mild presentation. The lesions on her lower extremities were diagnosed as erythema nodosum. At the time of this report, the skin lesions are resolving.

**Discussion: Sarcoidosis**

Our patient demonstrated a mild form of sarcoidosis which affects one-quarter to one-third of patients with this disorder; they often have with constitutional symptoms that may include cough, dyspnea, arthralgias, uveitis and a variety of skin lesions. A further one-quarter of patients, especially those on the Mainland, are asymptomatic, the disease having been discovered on routine chest X-rays. In our opinion, this subset may well be even larger, since many so afflicted obviously never visit a physician because they have no constitutional complaints.

The remainder of patients have a more insidious onset that develops over a period of months. This group is more likely to develop chronic disease with subsequent severe pulmonary and other organ damage.

It is quite likely that our patient was exposed to the putative agent (or agents) of sarcoid before moving to Hawaii, and that initiated sarcoidosis after a latent period of at least 13 years. Speculation concerning this activation process could center on poorly understood immunologic and/or genetic mechanisms. A further unknown factor acting as a hapten may have aided in the recognition of the dormant antigen by the patient's reticuloendothelial system. Or, it is possible that this new factor — or even the offending agent itself — was genetically transcribed, its coding system having been unlocked by an unknown environmental stimulus.

**Epidemiology**

The highest incidence of sarcoidosis is found in northern Europe and in North America. Sweden has the highest incidence of any country, at 64/100,000; however, according to autopsy studies, the true incidence may be 10 times higher[1].The incidence in the U.S. is 11 to 40/100,000, the highest being among Blacks in the Southeast. Parts of Africa and Japan also show a relatively high incidence. Sarcoidosis is rare in southern Europe and in southeast Asia.

In the U.S., Blacks are affected 10 to 17 times more often than Whites. Black women are affected twice as often as Black men, but the sex ratio in Whites is approximately equal. The disease is most common in the 3rd and 4th decades of



Fig. 2 — Left hilar adenopathy with possible right hilar adenopathy. Chest X-ray, 1990.



Fig. 3 — Skin biopsy demonstrating granulomas in upper dermis. Low power. H & E stain.

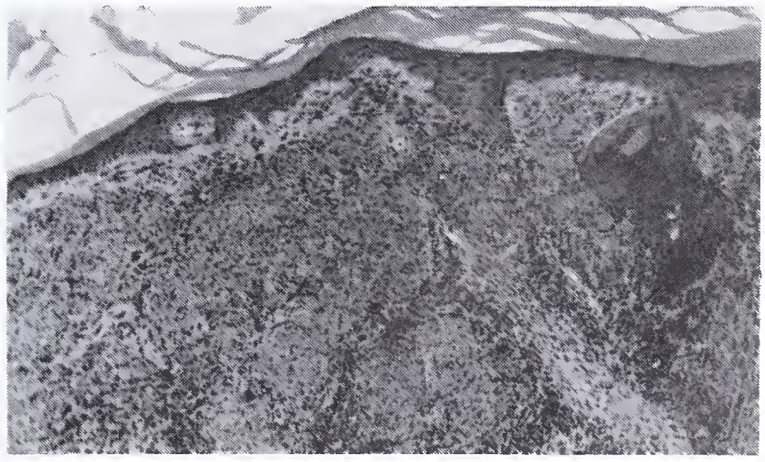


Fig. 4 — Skin biopsy. Mid power. H & E stain.

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life. An increasing number of familial cases are being noted, most frequently brother and sister[1].

### Etiology and pathogenesis

Extensive studies so far have not elucidated an etiologic agent for sarcoidosis[1]. Many agents have been postulated as to the cause. These include Mycobacterium tuberculosis, Mycobacterium leprae, atypical Mycobacteria, a variety of viruses, fungi, inorganic agents and chemicals; however, the data are inconclusive.

Whatever the inciting event, the histopathogenesis of sarcoidosis suggests an immunologic basis[2]. It is postulated that an unknown antigen (or antigens) is recognized by a macrophage/histiocyte, which then stimulates the proliferation of helper T4 lymphocytes, that in turn stimulate B-lymphocytes to proliferate. The end-result is a granuloma composed of epithelioid histiocytes bordered by T-4 lymphocytes.

### Clinical manifestations

Ninety percent of patients with sarcoidosis have an abnormal chest X-ray but only 5 to 15% develop serious pulmonary disease[2]. Overall, approximately 50% of patients have respiratory symptoms such as a dry cough, chest pain, shortness of breath, rarely hemoptysis. Less than 2% develop a pneumothorax. Intraparenchymal pulmonary granulomas have a predilection for the peribronchial, subpleural and interlobular septal connective tissues. Progressive disease with fibrosis is an interstitial process.

The skin is involved in 20 to 35% of cases[4]. A great variety of skin lesions have been associated with sarcoidosis; the most common are plaques, maculopapular eruptions, subcutaneous nodules, erythema nodosum and lupus pernio. The first 3 categories are ubiquitous in distribution. The papular form is most frequently located in the periorbital region, where it may simulate granulomatous rosacea. Erythema nodosum occurs in up to 25% of patients and may be the initial symptom. It is most commonly located on the anterior aspects of the lower legs and presents as tender, erythematous, or violaceous nodules. Most patients with sarcoid and erythema nodosum have a shortened disease course, with early spontaneous resolution. Those with Lofgren's Syndrome (a complex of erythema nodosum, bilateral hilar adenopathy, together with possible joint symptoms and uveitis) have an excellent prognosis. In one study, cases with erythema nodosum, acute arthritis and hilar adenopathy resulted in complete resolution of sarcoidosis in 85%, 83% and 73% of patients, respectively[5]. Sarcoid skin lesions have been reported in skin scars (including keloids) and in skin damaged by trauma, infection and radiation.

The eye is involved in 25 to 50% of patients with systemic disease[4]. The most common symptoms are blurred vision, tearing, and photophobia. Granulomatous uveitis is the most common eye lesion; approximately 75% of these patients have anterior uveitis and the remainder have posterior uveitis. The clinical course may be acute or chronic. Heerfordt's Syndrome (uveoparotid fever) consists of uveitis, parotid gland enlargement and facial nerve palsy. Conjunctival involvement is the second most common ocular finding and can lead to keratoconjunctivitis sicca. Eye involvement can be serious, leading to adhesions between the iris and lens, cataract formation, glaucoma and blindness.

The peripheral lymph nodes are involved in 50 to 75% of patients; most commonly the cervical, axillary, epitrochlear and inguinal nodes[3]. It is important to remember that sarcoid-like granulomas may occur in lymph nodes that drain a nearby malignant tumor. The spleen can be involved in up to 60% of patients, but symptoms occur only in the 15% of patients who demonstrate splenomegaly[3].

Liver biopsies have indicated involvement in 60 to 90% of patients[2]. The periportal regions are the most often affected by the granulomas. Cholestasis is rare, yet mild elevations of liver enzymes (alkaline phosphatase and serum bilirubin) are not uncommon.

Neurologic findings are present in 5% of patients[3]. Space-occupying granulomatous lesions of the cerebrum may cause confusion, seizure activity, hydrocephalus or hemiparesis. These mass lesions are most common at the base of the cerebrum and can elicit symptoms and signs related to derangement of the hypothalamic-pituitary axis. Chronic aseptic granulomatous meningitis has been recorded. Cranial and peripheral nerves are frequently involved, whereas spinal cord involvement is rare.

Cardiac symptoms are present in 5% of patients[1]. At autopsy, 27% of patients with systemic sarcoidosis have cardiac granulomatous lesions. The most common cardiac symptom is an arrhythmia caused by granulomas in the septum and ventricles. Sudden cardiac death may occur, and at autopsy these patients are found to have massive fibrosis and granulomatous involvement of the myocardium.

Kidney involvement is rare. Renal disease is usually due to an alteration in calcium metabolism, not to granuloma formation.

Sarcoid granulomas of the bone marrow have been reported in 15 to 40% of cases, although their effects on hematopoiesis are minimal[2].

### Diagnosis

The diagnosis of sarcoidosis is usually based on the patient's clinical presentation, the primary ancillary test being a chest X-ray which, in at least 25% of patients, may be the only evidence of disease. The classic findings of Lofgren's Syndrome are adequate for a diagnosis of sarcoidosis[4]. Of utmost importance is the demonstration of noncaseating granulomas which must be differentiated from the granulomas of tuberculoid leprosy and foreign body reaction. Biopsies of skin or accessible lymph nodes are the most obvious choice to verify the existence of granulomata. If these sites are not revealing, bronchoscopic biopsies may be considered. Ophthalmologic examination and pulmonary function tests should be performed on all patients. The traditional Kveim test is rarely performed at present because the extract is not available and it lacks specificity.

ACE may be elevated. Produced by the epithelioid histiocytes of the granulomas, it is not a specific marker for sarcoidosis and is elevated in many of the diseases that fall within the differential diagnosis of sarcoidosis[2,6]. Sarcoidosis is a well-known cause of hypercalcemia.

Two specialized tests include broncho-alveolar lavage and the Gallium-67 lung scan. These are used in centers that regularly see patients with sarcoidosis. Lavage is done to ascertain the preponderance of lymphocytes, the majority of which are T-4[1]. This may be of aid in differentiating sarcoidosis from

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allergic alveolitis in which there is also a marked increase in the lymphocyte population; however, these are T-8 (suppressor) lymphocytes[3]. The Gallium-67 scan will often display a diffuse uptake consistent with the interstitial disease process of sarcoidosis. However, the scan is not specific; it is expensive and exposes the patient to a significant amount of radiation[3].

### Differential diagnosis

The early chest X-ray changes of sarcoid can mimic tuberculosis, lymphoma and metastatic carcinoma, as well as systemic fungal diseases, most notably histoplasmosis and coccidiodomycosis. More advanced lung disease demonstrates changes on X-ray similar to that of extrinsic allergic alveolitis, fibrosing alveolitis, histiocytosis, systemic lupus erythematosus, rheumatoid lung, scleroderma and tuberculosis. On chest X-ray the most advanced disease can be confused with tuberculosis, bullous emphysema, bronchiectasis and melioidosis[6]. Furthermore, berylliosis, asbestosis, the diseases caused by silica, talc, mineral oil, and certain drugs (methotrexate, cromolyn sodium) can produce granulomatous lung disease and evoke a granulomatous response in lymph nodes but rarely in the skin.

Certain infectious diseases, apart from those already enumerated, are likely to provoke a granulomatous response in lymph nodes alone. These include toxoplasmosis, infectious mononucleosis, brucellosis, chlamydia, pneumocystis carinii, tularemia, various fungi, all stages of syphilis, the fairly early stages of cat scratch disease and lymphogranuloma venereum. Granulomas may arise in the bowel and mesenteric lymph nodes in Crohn's Disease, Whipple's Disease, and infection caused by Yersinia enterocolitica. Malignant tumors may evoke a sarcoid-like response in adjacent lymph nodes.

Many of the aforementioned entities can also produce granulomas in the skin. Further causes of skin granulomas include insect bites, delayed hypersensitivity reactions, leprosy, acne rosacea, granuloma annulare, tertiary syphilis, and pricks by sea urchins and by plants with spikes.

Sarcoid arthritis may be confused with gout, acute rheumatic fever, tuberculosis, Yersinia enterocolitica arthritis, and rarely rheumatoid arthritis.

### Treatment and prognosis

Treatment is initiated depending on the severity of systemic or organ disease[1,3]. Therapy is not required for patients who present with an incidental bilateral hilar adenopathy on chest X-ray but are otherwise asyptomatic. Likewise, those presenting with an acute onset with some or all of the manifestations of Lofgren's Syndrome rarely require treatment because 80% will experience spontaneous resolution in any case.

Of all organ systems, the lung is the most often involved and the disease activity must be assessed fully. In most cases, clinical examination, pulmonary function tests, and chest X-ray will be sufficient. The chest X-ray findings are classically divided into 5 grades: Grade O - absence of abnormal radiographic findings; Grade I - bilateral hilar adenopathy without involvement of lung parenchyma; Grade II - bilateral hilar adenopathy and parenchymal infiltration; Grade III - widespread parenchymal infiltration without hilar adenopathy; Grade IV - irreversible fibrosis with the formation of bullae[1]. Treatment must be initiated in patients with Grade II disease if they are symptomatic or if more specialized studies (Gallium-67 scan or broncho-alveolar lavage) in asymptomatic patients establish an increase in the activity of the disease process.

Corticosteroids are the drug of choice for most patients with pulmonary and extrapulmonary disease (uveitis, cardiac arrhythmias, neurologic lesions and arthritis). Chloroquine and hydroxychloroquine are occasionally efficacious in the various skin manifestations associated with sarcoidosis, in particular lupus pernio. Interestingly, both corticosteroids and chloroquine tend to lower high serum calcium levels by inhibiting the action of active Vitamin D on the gut and also by inactivating the compound itself. This in turn will reduce the urinary excretion of calcium and prevent stone formation.

The prognosis in sarcoidosis is good. However, in perhaps 15% of patients the disease follows a chronic, persistent or recurrent course. Death directly related to sarcoidosis occurs in up to 6% of patients[4].

### Conclusion

Sarcoidosis, a common disease in the U.S. and various parts of Europe, is very rarely encountered in Hawaii. Most physicians here have never seen a case in our state. Diagnosis may be difficult, and in fact may not even be considered. Both tuberculosis and leprosy can present with granulomatous skin lesions remarkably similar to sarcoidosis[2,7,8].

Skin involvement by either tuberculoid leprosy or sarcoidosis often cannot be differentiated, clinically or histologically one from the other. However, lepromatous leprosy usually presents with few or no granulomata, and macrophages tend to be packed with acid fast mycobacteria. Even so, the skin lesions of lepromatous leprosy can be difficult to differentiate clinically from sarcoidosis because they tend to present in the form of symmetric and bilateral plaques, nodules, or papules; erythema nodosum-like lesions may appear during reactional states[8]. Hypaesthesia is usually present in the skin lesions of tuberculoid leprosy yet not in those of sarcoidosis. Additional problems are encountered in distinguishing the 3 intermediate forms of leprosy: Borderline tuberculoid, borderline, and borderline lepromatous leprosy. In these situations, both the clinical and histologic appearance of the involved skin may be an exact replica of sarcoidosis.

In summary, we have described the first case of sarcoidosis to be reported from Hawaii. Undoubtedly, others have been seen but have not been documented in the medical literature. With the ever-increasing influx of residents to Hawaii from endemic areas, more cases of sarcoidosis are bound to be seen by physicians in the state.

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■

# Maka O Ka Kauka

Russell T. Stodd, MD

**If things are going well, you have overlooked something.**

In a recent prospective study conducted at New York Eye and Ear Infirmary, investigators demonstrated that the incidence of culture-growth acute postoperative endopthalmitis was reduced markedly by using a surgery preparation of povidone-iodine 5%. Nearly 8,000 patients were included in an 11-month study in which the povidone-iodine group had one-fourth the infection rate of that seen in a control population. Mark Speaker MD, stated that no significant complications have been seen among the more than 15,000 patients in whom it has been used.

**"Academy politics is the most vicious and bitter form of politics, because the stakes are so low."**

While the American Academy of Ophthalmology oligarchy has never (to my knowledge) been particularly enamored with the concept of one man-one vote, the parliamentary maneuvers in regard to 1990 elections of the Board of Directors were alarmingly odious. Hard working Oliver Dabezies MD, of New Orleans, intelligent, courteous and respectful, was nominated by petition since the Board and its nominating committee chose not to place his name on the ballot. However, when the time came to organize the ballot, the Board ruled that positions were "slotted," and that Dr Dabezies would have to select a Board nominee to challenge, a maneuver the doctor did not expect and certainly did not desire. He had reason to expect that the election of Directors would be an open one with the various candidates achieving office based on general competition, much as occurs when the AMA House of Delegates selects its officers. He considered withdrawing his name, but felt a duty to those members who had petitioned him to run (myself included). Hence, Dr Dabezies was obliged to make a choice as to which Board nominee he would "challenge." Of course, he lost the election; and furthermore, he was criticized because of the Board nominee that he selected to challenge. Our Academy leadership, in its obligation to be egalitarian, will put off change as long as possible.

*(Continued on page 213)* ➤


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## MAKA O KA KAUKA

*(Continued from page 211)*

**A man should be greater than some of his parts.**

Ironic indeed, that the man who directed his home state into a financial disaster, tied medical licensure to Medicare participation, and endorsed retroactive assessment of medical liability premiums in support of insurance carrier malfeasance, should be invited by the University of Hawaii to deliver a series of lectures on a national health policy. Former Governor Dukakis should come here to learn, not to instruct! Hawaii is far ahead of all other states in providing access to health care. Of course, the invitation to the former Presidential candidate was at the behest of our Governor, who seems to remain charmed by the New England loser. What subtle political design is at work here?

**Good words are worth much, and cost little.**

A recent PBS broadcast carried a 1-hour production of "cataract surgery" performed by Wills Eye Hospital in Philadelphia. The video presented an excellent demonstration of microsurgery, using phakoemulsification and a flexible lens implant. The surgeon, Raymond Adams, and department chairman William Tasman, emphasized various techniques and implants that are available, all yielding very good visual results. Included were careful patient education with a comprehensive anatomic and surgical discussion, a plan of pre- and post-op care, and a description of cataract visual impairment. At Wills, there are 6 on the surgical team with surgeon and ophthalmologist assistant, anesthesiologist and nurse anesthetist, plus scrub and circulating nurses. The sum was an apt model to establish that cataract surgery is a safe, easy, productive experience for the patient, but requires a skilled team and considerable technology.

**Friends may come and go, but enemies accumulate.**

Once again the HHS Inspector General's office is threatening action in regard to practitioners who routinely waive the copayment. Under recent guidelines, Part B practitioners and suppliers who fail to undertake a "reasonable" copayment collection effort are at

*(Continued)* ➤


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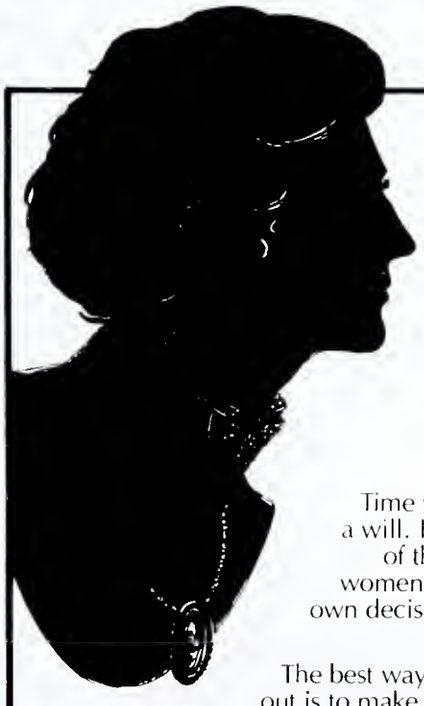
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## MAKA O KA KAUKA

*(Continued from page 213)*

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1. Define more clearly "legitimate" patient indigence that would justify noncollection of the copayment.

2. Warn that unjustified waivers could precipitate a government suit under the Federal False Claims Act — and triple-damage and penalty provisions can transform a modest amount of incorrect charges into hefty judgments.

3. Warn that copay violators could be subject to civil money penalties and exclusion from Medicare under the anti-kickback statute.

**If law school is so hard to get through, how come there are so many lawyers?**

America is presently suffering under the smothering, pervading influence of approximately 700,000 lawyers. There has been a decline in high-paying legal jobs and law schools are finding it more difficult to place graduates. Yet, applications to law schools are on the rise, and a record 95,000 people seeking admission this year applied to 175 accredited law schools. Law school administrators say the glamorized image of lawyers on television continues to lure many to law school, and many schools have failed to give new students a clear picture of the job market.

**Addenda —**

— Henry William, an American ophthalmologist, was the first to use a corneoscleral suture to close a cataract wound, in 1865.

— Americans spend $1,369,863 on laxatives and $3,673,973 on vitamins *each day!*

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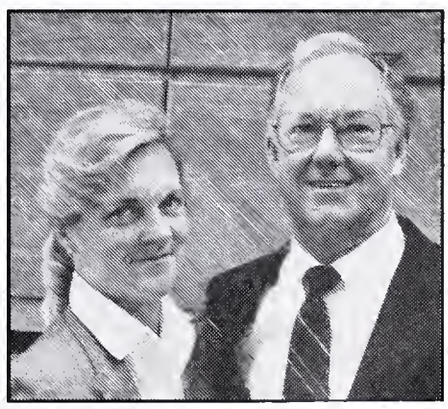
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This issue of the *Journal* contains 3 articles that, combined, are an example of the efforts taken to "purify" the end-product even further.

Naoky Tsai MD, a gastroenterologist on the Windward side, relates the history of the search to define a virus that is thought to be the major cause of post-transfusion hepatitis.

Dan Phillips MD at the Cancer Research Center of Hawaii addresses the algorithm of management and treatment when hepatitis C — the etiology of which has now been confirmed as the hepatitis C virus (HCV) — the non-A, non-B (NANB) component of post-transfusion hepatitis, presents itself in a patient.

And lastly, Julia Frohlich MD, the Director of the Blood Bank of Hawaii, brings it all into focus in terms of what it means in assurance to the clinical physicians and their patients in Hawaii. Julia's efforts at the Blood Bank to upgrade its procedures and products are highly valued by our community.

J. I. Frederick Reppun MD
Editor

# The landmark *JAMA* of 15 May 1991

Fifteen articles plus 2 editorials in this issue of *JAMA* focus like a sledgehammer on the issue of America's 33 million uninsured and underinsured. This represents only 12.2% of our nation's people who number 270 million. The other 87.8% enjoy the best medical care in the world, we claim with considerable pride. Nevertheless, we are ashamed of that 33 million — that 12.2% figure — primarily because it puts us far down the list of industrialized nations of the world in terms of infant mortality and other pernicious parameters. It also generates the horrible specter of another 12% figure — the 12% of GNP that this nation spends on medical care as compared with the next closest, Canada, the figure for which is creeping up to 8% of its GNP.

Gross figures aside, it is not just the health of the 33 million that is of concern to this society of ours; it is the unpleasant fact of the seeming barrier to access to needed medical care. If the access is denied because of its cost, then we should be ashamed. The definite, unpalatable implication that it means we have 2 tiers of medical care — one for the rich and one for the poor — hurts our national pride.

*JAMA* 15 May forces us in the profession to pay heed to the national issue. The AMA also has the reputation of attracting public attention, which means that our patients will be expecting their doctors to be cognizant of the issue and to be responsive to their questions on it.

Therefore, we append here what the AMA has released to the press — brief abstracts of 5 of the 15 items (the AMA's choice, not ours). Many of our readers will probably not wade through *JAMA* 15 May (ie if they even subscribe to it). Entering these 5 abstracts in the *Journal* might serve a useful purpose in enlightening them. Please note, also, that the source — *JAMA* 15 May — also contains the opinions of 12 prestigious medical people, societies, institutions, residency programs, groups, medical schools in LTTEs on the subject, plus a modern version of the Hippocratic oath by Louis Weinstein MD speaking to the University of Arizona chapter of Alpha Omega Alpha.

J. I. Frederick Reppun MD
Editor

## Health Access America — Strengthening the US Health Care System

"The vast majority of Americans are satisfied with their physicians and the health care services they receive," writes James S. Todd MD, executive vice president of the American Medical Association, with colleagues. The authors say about 87% of Americans have adequate private or public health insurance.

The AMA's reform plan, called Health Access America (HAA), is founded on 6 principles: (1) That health care system improvements should preserve current strengths; (2) that all Americans, regardless of income, should have affordable coverage for appropriate health care; (3) that care should be of high quality and at an appropriate cost; (4) that patients should

*(Continued on page 223)* ➤

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be free to choose by whom and how their health benefits are provided: (5) that special efforts should be made to ensure the elderly have access to care; and (6) that physicians should maintain the highest ethical standards when providing care.

The plan has 16 reform recommendations to achieve expanded access. One recommendation calls for Medicaid reform. "In all states, persons below poverty income levels would be eligible for and receive a uniform set of adequate benefits," they write. "Income status should be the only eligibility criterion; other existing categorical requirements should be repealed." Only 40% of people at the federally determined poverty level are currently covered by Medicaid.

Since approximately 26 million of the 33 million uninsured Americans are workers and their families, HAA "requires employer provision of health insurance for all full-time employees and their families, with tax help to employers," they write.

The plan also calls for state-level risk pools, or state legislature-created insurance programs. Medically uninsurable people and those of whom individual or group policies are out of reach would be able to buy insurance from risk pools. "[R]isk pools help ensure that no American would be unable to obtain affordable health insurance because of a health condition," they say.

Noting the threat of financial bankruptcy to Medicare, the program should be actually sound and prefunded and include catastrophic benefits, they write. The plan also calls for expansion of long-term care benefits for senior citizens.

"In a time when budget deficits are running at record highs, when economic recession threatens our economic well-being, and when nearly every other democratic nation is having health care system problems, it would seem prudent to approach reform in a carefully managed, incremental manner," they write.

"It should come as no surprise that providing insurance coverage to over 30 million additional people will be costly," they say. "We suggest that we all accept this idea and get on with the discussion of the type of reform that would best meet the nation's needs. Once the precise nature of the reform is decided, these costs can be accurately estimated and sources of funding committed."

J.S. Todd, S.V. Seekins, J.A. Krichbaum, L.K. Harvey
Chicago, Ill.

## National Health Care Reform: An Aura of Inevitability is Upon Us

"An aura of inevitability is upon us," writes George D. Lundberg MD, editor of *JAMA*. "It is no longer acceptable morally, ethically, or economically for so many of our people to be medically uninsured or seriously underinsured."

That sufficient access to medical care by all Americans is not yet a reality is due, in part, to "long-standing, systematic, institutionalized racial discrimination," Lundberg writes. "It is not a coincidence that the United States of America and the Republic of South Africa — the only two developed, industrialized countries that do not have a national health policy ensuring that all citizens have access to basic health care — also are the only two such countries that have within their borders substantial numbers of underserved people who are different ethnically from the controlling group."

Because there are neither enough providers nor enough money to give everybody all possible health care, we ration care, but in irrational ways, he writes.

Among the ways health care is rationed is by "pricing that does not discriminate between need and effective medical care and unneeded or ineffective care;" by insufficient resources devoted to disease prevention; by insufficient numbers of primary care physicians; and by "language and cultural barriers that exclude Hispanics and blacks from appropriate access," Lundberg says.

He says that for reform to be successful, it will have to include cost containment measures, writing: "Because the opinion that costs are a huge medical problem is strongly held by leaders of industry, labor, and government, as well as by physicians and the general public, and because of concerns about whether Americans are receiving appropriate value for money spent, I do not believe that meaningful health care reform will come about unless it is tied to some form of cost control."

Lundberg says national provision of basic health care is a "national moral imperative and . . . a pragmatic necessity as well.

"We have the knowledge and the resources, the skills, the time, and the moral prescience," he writes. "We need only clear-cut objectives and proper organization of our resources. Have we now the national will and leadership?"

G.D. Lundberg
Chicago, Ill.

## A Call for Action: The Pepper Commission's Blueprint for Health Care Reform

"I believe we can move toward enactment of health care reform in the 102nd Congress," writes US Senator John D. Rockefeller IV (D-W. Va.). Rockefeller is chairman of the Pepper Commission, a bipartisan federal commission which has developed a blueprint to reform the nation's health care system.

"I intend to introduce legislation that embodies the Pepper Commission recommendations early in the 102nd Congress," Rockefeller writes. "That reform, even if it is not identical to the Pepper Commission recommendations as they now stand, should incorporate its basic tenets, because they offer a practical means of achieving the universal protection our citizens are coming to demand."

Rockefeller says the Pepper Commission blueprint for reform "would build universal coverage by securing, improving, and extending the combination of job-based and public coverage we now have."

Its elements include a mix of incentives and requirements "that would guarantee all workers (with their nonworking dependents) insurance coverage through their jobs; replacement of Medicaid [the federal program to provide health care for the poor] with a new federal program that would cover all those not covered through the workplace and workers whose

*(Continued)* ➤

employers find public coverage more affordable."

The Commission also calls for "guaranteed affordable coverage for employers — through reform of private insurance, tax credits for small employers, and the opportunity to purchase public coverage."

Addressing amounts of coverage, Rockefeller says there should be "a minimum benefit standard for private and public plans that would cover preventive and primary services as well as catastrophic care and would include cost sharing (subject to ability to pay)." The Pepper Commission also called for initiatives to promote quality and contain costs in the public and private sectors.

Rockefeller notes, however, that achieving universal coverage will require an increase in the nation's health care expenditures.

"In my view," Rockefeller says, "the Pepper Commission blueprint for health care reform can serve as a rallying point for the political consensus that can make universal coverage in an efficient health system a reality."

J.D. Rockefeller IV
Washington, DC

## A Framework for Reform of the US Health Care Financing and Provision System

"Our recommendations are intended to constitute a politically moderate approach, with roles and trade-offs for all current participants," writes a task force from the Kansas Employer Coalition on Health, Inc., Topeka. The group is the state's primary voice on employer health policy matters.

In their plan, the Kansas group says: "Competitive forces are supported by leaving the primary funding and provision systems in the private sector and by establishing an overall budget. Regulation is invoked to bring about universality of coverage, explicit containment of costs, and preservation of quality."

It calls for a system in which "each citizen and citizen's family" not eligible for Medicare would be covered either by an employer-sponsored plan or a publicly sponsored plan. Employers could either provide a plan or pay a tax to support the public plan.

Saying the concept of a budget is fundamental to health care cost containment, it calls for a mechanism controlled either by states or the federal government to determine the maximum annual percentage increases for all health insurance plan premiums.

Controlling premium increases would "place insurers at risk for increasing costs," the task force writes. "Thus, insurers would have a powerful incentive to control costs."

Government monitoring of quality and public dissemination of quality comparisons among providers would keep insurers from trying to profit by downgrading the quality of care.

"If one accepts the premise that the public has a responsibility to ensure its members a reasonable level of care, regardless of economic status, then it follows that systematic reform must restore the practice of well people shouldering the financial burden imposed on the ill and aged," the group writes, calling for replacement of "experience ratings" as the basis for determining premiums with "community ratings." Under experience rating, insurance companies limit their coverage to limit their risk exposure; under community rating, risk is spread across an entire community.

Additionally, the task force recommends "that each patient or patient's family, means permitting, shall pay some fee for every episode of care, up to an established out-of-pocket maximum." Making consumers responsible for a portion of costs would work to contain demand for services.

"Although these elements are certainly amenable to modification, they are deemed by the authors to be hung in fair and delicate balance," they write. "Modifications will necessarily alter the balance of trade-offs and the likelihood of acceptance by various groups."

The Kansas Employer Coalition on Health,
Task Force on Long-term Solutions, Topeka, Kan.

## The Health Security Partnership: A Federal-State Universal Insurance and Cost-Containment Program

That call comes from the Committee for National Health Insurance, which has developed a health care system reform plan it calls the Health Security Partnership (HSP).

"The Health Security Partnership is designed to provide financial protection to enrolled individuals and full payment to providers through insurance, encouraging health care providers to treat all citizens the same, regardless of income," writes Rash Fein PhD, from the Department of Social Medicine at Harvard Medical School, Boston, Mass., and a member of the Committee.

"The proposal provides a precise outlining of governmental responsibilities and allows freedom for individual states to meet their responsibilities through mechanisms and measures they deem appropriate," Fein says. "Our plan reflects the view that, like politics, health care services are local, and both citizenship and medical care are enhanced by bringing decisions closer to the people."

The HSP calls for states to develop health budgets with federal review; a ban on balance billing; more consumer participation in policy development; and insurance premiums — if states want them at all — to be determined by community rather than experience rating.

Addressing care, the proposal requires a package of basic benefits, including "necessary medical services provided by physicians and hospitals, in-hospital drugs, and preventive services."

Financing of the Health Security Partnership would be with federal, state and tax dollars. Premium funds would also be used after each state determines the appropriate role for private insurers.

"We expect the need for explicit decisions to help restrain cost," Fein says. The HSP calls for "negotiated, resource-based relative value fee levels, continued expansion of capitated payment systems . . . and expansion of federal and state efforts in the areas of technology and treatment effectiveness.

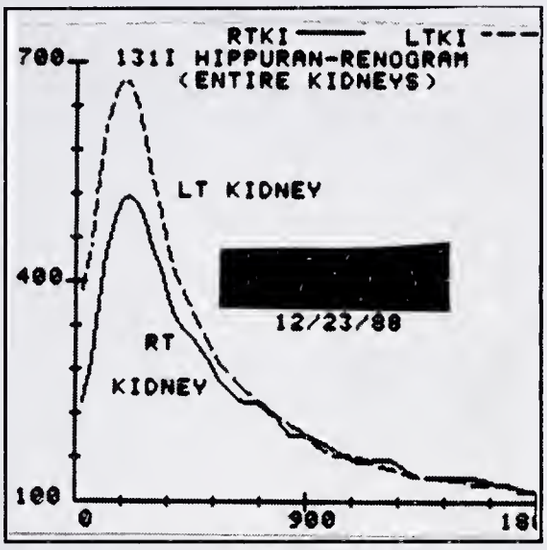
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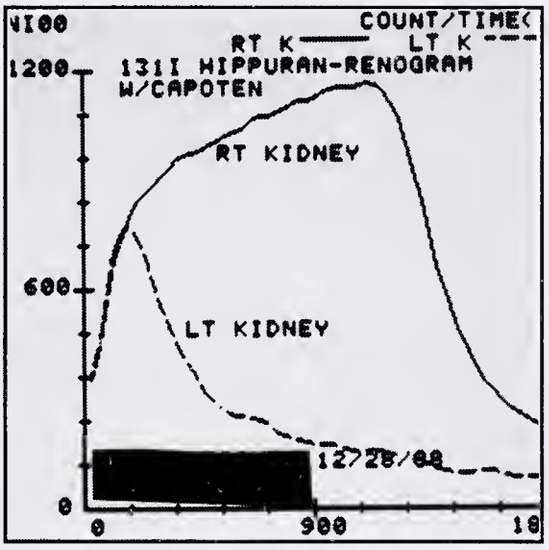
# Nuclear Medicine Teaching File

## CAPTOPRIL RENOGRAM IN RENOVASCULAR HYPERTENSION

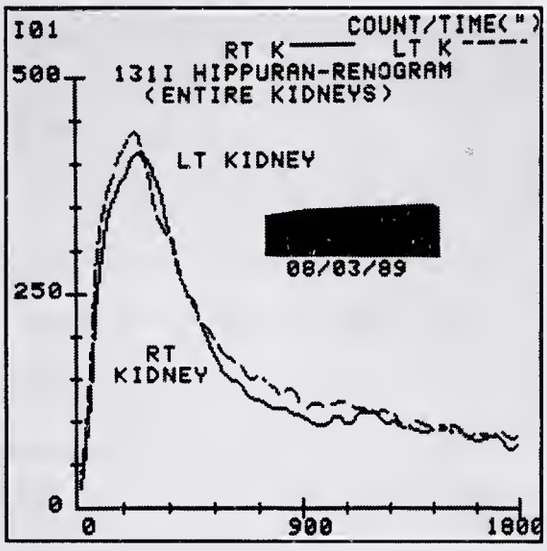
**Clinical History: 43 year old female with headache, accelerating hypertension, and mild azotemia.**



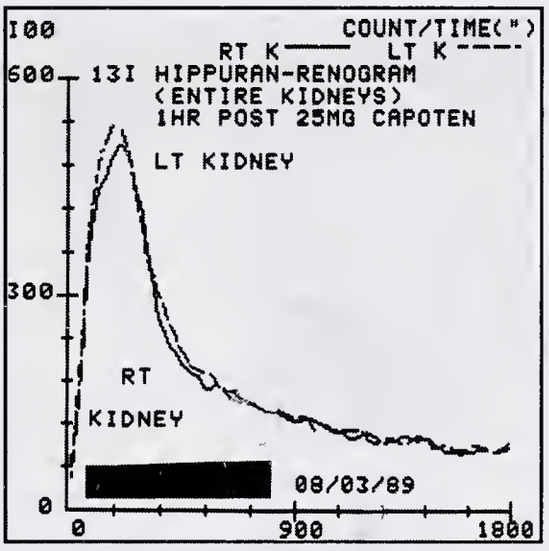

1. Baseline renogram without captopril shows slightly reduced function and mild delay in urinary clearance on the right.




2. Captopril renogram prior to angioplasty. Note exaggerated delay in urinary clearance induced by captopril on the right, consistent with renovascular hypertension. Arteriography showed severe fibromuscular dysplasia.




3. Renogram without captopril following angioplasty of the right renal artery. Note symmetrical kidney function.




4. Captopril renogram after angioplasty shows no further evidence for renovascular hypertension.


*Nuclear Medicine – Non-invasive, physiologic imaging*

**PACIFIC RADIOPHARMACY, LTD.**

*A JOINT VENTURE OF*
*QUEEN'S MEDICAL CENTER, KUAKINI, SAINT FRANCIS,*
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annual increases in the federal contribution, health expenditures within a state could continue to increase rapidly and as a percentage of the gross national product only if the electorate and its representatives made a deliberate decision that they favored and were prepared to pay for such increases," Fein writes.

He says implementing the HSP would cost an additional 5% in US personal health care expenditures in the first year. "After a one-time jump, the expenditure would flatten out and diverge from present trends. After a few years, the nation would be spending less than would otherwise be the case."

R. Fein
Boston, Mass.

**Addendum:**

We happened to tape the McNeil/Lehrer NewsHour on Tuesday 21 May; the entire hour was devoted to *JAMA* 15 May. It featured prominently both Lundberg and Todd.

The HMA has copies in the Communications offices. Readers are invited to view it at their leisure at the HMA offices during business hours.

## From the AMA *This Week* . . .

AMA's Executive Vice President James Todd MD, together with editor Richard Lewis, have initiated a brief summation of vital information that is being distributed on a weekly basis to "the leaders of the medical profession by first class mail so as to arrive each Monday morning."

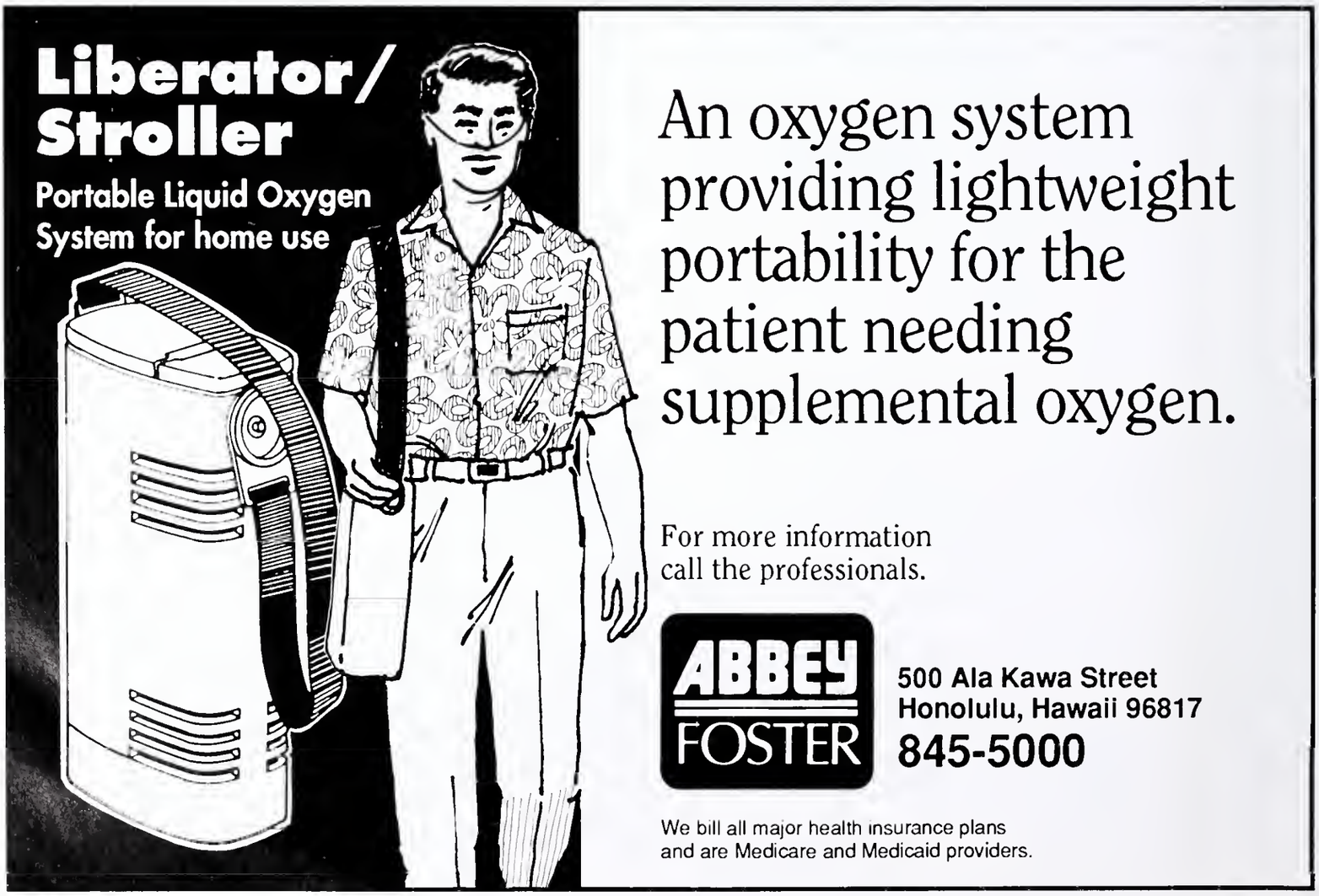
We feel that here in Hawaii we could do with a closer relationship with "organized medicine" as exemplified by the AMA; therefore, we shall try to include in the pages of the *Journal* excerpts of interest to the members of the HMA on an occasional basis.

The March 18 *This Week* is identified as Vol. 1 No. 1. It contains this bit of news:

"America's physician population grew from 260,484 in 1960 to 600,789 in 1989 . . . In 1960 there was one physician for every 703 people; in 1989 the ratio was one per 416.

"Group practices have quadrupled in number . . . the largest has 2,000 physicians in it . . . in a recent survey, only 11% of Residents planned to go into solo practice."

J. I. Frederick Reppun MD
Editor



# Highlights of the HMA Council Meeting — June 7, 1991

Present: J. McDonnell, S. Wallach, J. Chang, A. Don, J. Kim, C. Kam, R. Stodd, R. Ando, F. Holshchuh, C. Wong, B. Shitamoto, R. Laird, R. Lee-Ching, P. Blanchette, P. DeMare, M. Dung, . Spangler, H.K.W. Chinn, H. Fong, M. Shirasu, W. Young, E. Bade, R. Goodale, D. Fu, H. Percy, T. Smith, W. Dang, and N. Winn. Also present were guests: Ed Pacheco, John Armstrong - TAMC, Kevin Kurohara - Hilo, and Ed Margulies - DOH. HMA staff present: J. Won, N. Jones, J. Asato, J. Estioko, L. Tong Esq, P. Kawamoto, and M. Lindsey, recording secretary.

• The Council welcomed the presence of Mr Ed Pacheco, Palolo Valley Community leader, who came before the Council to offer congratulations to the medical caregivers of Hawaii upon the proclamation of Governor Waihee that June was Health Care Team Month. It was Pacheco's constant efforts that prevailed upon the Governor to do this. Mr Pacheco was thanked sincerely by rousing applause from the members present, for his untiring efforts to bring about this honor to all members of the health and medical care team.

• The Healthcare Association of Hawaii showed the Council a videotape of "Project Health Start" produced under the Association's auspices, delineating a program in which high-school students participated in health care tasks as a learning experience. The Council gave the project its support; volunteers from those present were recruited to participate in it.

• President McDonnell reported that:

(a) The coalition to counteract the implied message in the tour of an original Bill of Rights document sponsored by the Philip Morris Company, did an excellent job of promoting the slogan: "Live free; tobacco free" to the people of Hawaii;

(b) the Council should approve the formation of an ad hoc committee to consider remuneration to the HMA President and other officers of HMA, as mandated by the House of Delegates at its 1990 meeting; this the Council did.

(c) Members unanimously approved the President's suggestion to extend best wishes to Harry Arnold Jr MD, past president of the HMA and founding and long-time editor of the Hawaii Medical Journal, for his recovery from recent surgery performed in California.

• The Council approved the concept presented by Ed Margulies MD of the School Health Services division of the DoH, namely to provide clinics in certain schools to care for children in need of medical services otherwise unavailable to them, as a pilot program.

• It approved a resolution calling for an emergency session of the State Legislature to reconsider the DUI law. It also approved either a half-page or a full-page ad urging that the DUI law be amended to close loopholes in it.

• The Council granted a request from Hina Mauka's Alcohol and Drug Abuse Program for HMA to support its plea to the feds for monetary aid.

• It authorized disbursing $200 as a gift to Kapiolani Community College to help its program of educating, training and retaining the members of the health care team it has enrolled.

• It approved continuing the sponsorship of Marc Shlacter's radio talk show "The Country Doctor" that benefits HMA through the participation of one of its officers in answering listeners' questions, for another 13 weeks.

• The Council decided to ask Surgeon General of the United States Antonia Novella MD to visit Hawaii and address its physicians at an assembly.

• It also approved the expenditure of $500 toward gifts and a luncheon for the visiting physicians from HMA's sister organization, the Hiroshima Prefectural Medical Association, when 5 of them come to examine the Hibakusha (atomic bomb survivors) who were citizens of the U.S. and who happened to be in Hiroshima at the time as World War II came to an end. This will be the 8th time (every 2 years) that a medical team has come to Hawaii to study the long-term effects of radiation. The examinations will take place at Kuakini MC on the 6th and 7th of July. The luncheon is to take place at the HMA on July 3.

• Finally, the Council adopted the recommendation from the State Board of Medical Examiners that the reciprocity agreement between Hawaii and out-of-state paramedics and their training, examination and certification be reevaluated. The training of an MICT in Hawaii requires 1,200 hours, whereas those coming from the Mainland can be certified after only 400 hours of training, if they pass the examination given by the State of Hawaii.

Andrew Don, MD
HMA Secretary

# *This Week* at the AMA

James S. Todd MD
Executive Vice President

Richard Lewis
Editor

## ▲ May 6, 1991 • Volume 1, Number 8

In testimony before the House Ways and Means Committee, AMA Executive Vice President James S. Todd MD called for employment-based health insurance for the 20 million working Americans who do not have health coverage through their jobs. Initially, only very large employers would be subject to the requirement. Over time, it would apply to all employers. Dr. Todd proposed a series of changes in the insurance market, including financial incentives for small companies, that would enable all employers to provide health coverage.

## ▲ June 3, 1991 • Volume 1, Number 11

The AMA's Division of Market Research conducted a recent telephone survey [the number of phone calls is not stated/Ed].

Fifty nine point six percent of responders (members as well as non-members) felt that the general public should be made more aware of the high cost of medical liability.

The fact that cost-containment pressures from the feds hinder the delivery of quality medical care impressed 58.4% of physicians that responded, who felt the public should be aware that this affects the care they get.

* * *

The Young Physicians Section of the AMA is up in arms over a 1987 Medicare provision that authorized lower payment levels of physicians who were less than 5 years in practice. OBRA stipulates that those MDs in their first year of practice be paid 20% less than those of us who have been in the rat race for a long time; they may get 5% more each year until their 5th year in order to reach 100% parity pay.

To this we reply: If you take it away at the start of a career, how about giving it back at the end? A 5% a year increase till the 50th year would put many of us on a gravy train! We'd even settle for a 2% a year.

Perhaps the Honorables in the Congress would also like to get Venerables' pay, if their constituents keep voting them back into office.

J. I. Frederick Reppun MD
Editor

## Council Capers

# May 3, 1991

It was a sunny Friday afternoon when I arrived in Honolulu. It took me a whole hour to get my rental car to drive to a hotel room in the heart of Waikiki. This will be the last time I will take a "room/car package."

**Chow Time . . .** Usually the meals at the HMA office are really good. Judging from the dinner menu that evening, the HMA must be getting parsimonious.

**Roll Call and Money . . .** HMA membership increased to 1,828 members, but the active full-paying members dropped by 10 since last year. A list of delinquent members was reviewed, with Maui County having 10. In spite of more expenses this past month, the HMA is in good condition and solvent.

**Presidential Report . . .** John McDonnell reported on his trip to Washington, DC on April 15-17, 1991. He was joined by Steve Wallach and Jon Won. They met with Pat Saiki, Senator Akaka, and Representatives Abercrombie and Mink. A multitude of health issues and concerns were discussed. A more detailed account will be forthcoming.

**Membership Benefit Proposal . . .** It was M/S/P to accept Galaxy Business Products and Galaxy Medical Products' proposal to offer only HMA members an 18% discount on their purchases. This company has been in business since 1975 and an arrangement to ship orders to Neighbor Island members also was offered.

**Testing for lead . . .** A letter will be sent to all County Council public works chairmen and all building department heads regarding the inspection and regulation of all newly constructed water catchment systems in the State, since some hardware stores still sell water catchment systems containing lead (P6).

**Anti-Smoking . . .** HMA is promoting a campaign against children being encouraged to smoke by a company coming to Hawaii with a "Bill of Rights" tour.

**If it ain't broke . . .** A disturbing letter was received from Winona Rubin, Director of Human Services, stating that "a provider-access problem has arisen on the island of Maui." She was informed that Dr. McCleary was "burnt-out and was no longer able to provide this care." Rubin said that the Medicaid Program, because of this, was suffering a set-back on Maui. Rubin had been misinformed.

That same day the Council had received a letter from McCleary stating that "there is no crisis" to her knowledge. She wrote that "12 actively practicing pediatricians regularly see DHS children and infants and that the Maui pediatricians pride themselves on their commitment to providing quality care to all of the children of Maui, regardless of their ability to pay." Having practiced pediatrics on Maui for over 20 years, I must state unequivocally that there is no DHS medical access problem on Maui, and that the Maui pediatricians are commited and caring.

**A financial trust . . .** Allan Kunimoto reported that investors are now being sought.

**Tip of the Month . . .** When on Kauai, try the Pacific Cafe in Kapaa. When we were there, Kareem Abdul Jabbar was at the next table. Food's great!

Denis J. Fu MD
Councilor from Maui

## Spider Web

I peeked inside my skull today
The one with the pop-up top
A clinical tool, not a thing for play
Purchased at a surgical shop.

The cranial vault was filled with web
Built by one spider alone,
Spinning his way through life's flow and ebb
Suspending the web from bone.

It reminded me of my own skull
With a brain that's poised for thought
But inactive "spells" make it void and null
And its potential is all for nought.

Throughout these times webs fill my vault
While unbeknownst to me
It's filled with stuff I'd like to halt
But awareness is the absolute key.

And awareness goes when webs come in
And the more the spider weaves
Means fewer eggs from my cerebral "hen"
'til cerebration leaves!

The awareness key must open the lid
And maintain frequent use
Letting light shine in as once it did
To jar those spider webs loose.

Robert S. Flowers MD
June 8, 1985

# Hepatitis C virus: An overview

Naoky C.S. Tsai MD

*In May 1988, Kuo and Houghton and their colleagues in Chiron Research Laboratory, in cooperation with the physicians from NIH and CDC, announced their discovery of the agent which is responsible for the majority of Non-A Non-B Hepatitis (NANB) in post-transfusion hepatitis (PTH)[1,2], concluding a 15-year effort to search for this elusive agent. Although it is believed that there is another blood-borne agent responsible for a smaller percentage of the post-transfusion hepatitides, the new agent (an RNA virus closely related to Flavivirus) was named Hepatitis C (HCV).*

Subsequently, a serological test, an enzyme-linked immunoassay (ELISA), was developed and become commercially available. Blood banks throughout the whole country have incorporated this assay into one of their screening test batteries. In less than 3 years, a surge of research effort has produced much data in the epidemiology, virology, genetic mapping and treatment of HCV. With the availability of routine diagnostic testing for HCV and the FDA approval of Interferon as an efficacious therapeutic modality, the practicing clinicians will now need to know how to interpret accurately and understand the limitations of this diagnostic test, as well as the indications for Interferon therapy and what benefits it might hold.

The recognition of NANB hepatitis as a nosological entity is derived from the study of transfusion-associated Hepatitis (TAH). In 1975, Feinstone, Alter et al from NIH described a form of TAH which has no viral A or B markers or any other serologic markers[3]. With the use of more sensitive assays for hepatitis B virus (HBV) surface antigen, 2/3 of the TAH case were found to be negative. From 1975 until 1988, numerous attempts failed to identify the agent or agents responsible for NANB hepatitis.

We knew that there are probably 2 viral agents involved in blood-borne NANB hepatitis. Although NANB hepatitis is responsible for the majority of post-transfusion hepatitis, at least a third of NANB hepatitis cases are not infected via the percutaneous route (sporadic cases)[4].

Epidemiologic data of NANB hepatitis are extensive and have been reviewed recently[16].

Clinically, the disease has a shorter incubation period — somewhere between that of hepatitis A and B — a greater propensity to become chronic and it frequently progresses on to cirrhosis. It has been suggested that approximately 50% of NANB hepatitis patients develop biochemical evidence of chronic hepatitis; among those cases with chronic ALT (SGOT) elevations that are biopsied, approximately 60% have chronic active hepatitis (CAH) and/or cirrhosis. Five to 10% of those who develop acute NANB-TAH will eventually end up with cirrhosis. Despite the relatively mild symptomatology in chronic NANB hepatitis and the usual absence of physical abnormalities, mortality directly as a result of liver illness has been reported to be as high as 25%[5]. Furthermore, reports from Spain, Italy and Taiwan have implicated HCV positivity in the majority of cases of non-HBV hepatocellular carcinoma[6,7,8].

The path to the identification of HCV was tortuous. Attempts to isolate the virus, ie the antigen, were unsuccessful due to the minute amount of virus in the serum. Bradley et al at CDC in Atlanta have studied a group of chimpanzees with highly infectious chronic NANB hepatitis[9]. The authors stored sera which were believed to contain very high titers of infectious virus in the samples.

Adopting a different approach to the problem, a group of geneticists in the Chiron Lab in California, with expertise in genetic engineering, used the chimps' sera to achieve the final identification of HCV. By means of ultracentrifugation, all the viral particles were concentrated and all the nucleic acid was extracted, because whether the virus is RNA or DNA was unknown at the time.

Reverse transcriptase was then used with random primers (a synthetic oligonucleic acid produced by recombinant genetic engineering) to construct a cloned DNA library (cDNA) complementary to all the nucleic acids present in the pellet. It was then assumed that this pellet contained genetic material from both the chimps' genes and the viral genes. This cDNA was then digested by restriction enzymes to provide fragments which were next inserted into a bacteriophage GT-11 as a vector, and then to express their corresponding peptides through *E.Coli.*

Serum from a patient with confirmed NANB hepatitis was used as a source of viral antibody to screen through more than a million clones expressed in the bacteriophage GT-11. Final-

*(Continued)* ➤

Gastroentcrology
Clinical Assistant Professor
John A. Burns School of Medicine
University of Hawaii at Manoa

Address requests for reprints to:
Naoky Tsai MD
46-001 Kam Hwy., Suite 202
Kaneohe, Hawaii 96744

ly, clone 5-1-1 was found to react with the patient's serum. This 155-base pair clone was then extracted from the vector and used to hybridize to, and identify with, a larger clone in the original cDNA library, clone 81, which reacted solely with the original, highly infectious, champanzee's serum but not with the normal chimps' host genome[12]. At that point, the virus was determined to be an RNA virus because of its sensitivity to ribonuclease; it was single-stranded because it bound only to 1 of the 2 strands in the clone 81 cDNA. It was also determined to have about 5,000 to 10,000 nucleotides and had a lipid envelope.

This virus is distantly related to the Flavivirus and the Pestivirus Family, in terms of the general structure and organization of the positive-stranded RNA genome and its encoded viral polyproteins. Furthermore, with the understanding of the RNA sequences, most of the structural and non-structural proteins encoded by HCV have now been identified from in-vitro RNA translations and mammalian-cell expression studies. It is now known that on the 5' end, the HCV genome has one, single, open-reading frame (ORF), followed by structural protein codons, nucleocapsid and envelope, then 5 non-structural protein codons (NS1-NS5).

The clone 5-1-1 genome was found in the NS3-NS4 region, which through mammalian cell expression produced a 363 viral aminoacid fusion polypeptide (c100-3), which in turn was used in a radio-immunoassay to capture circulating anti-HCV antibodies in blood. This assay was then tested to validate the specificity of this clone in detecting viral antibodies associated with NANB hepatitis. The specificity and sensitivity of this radio-immunoassay was most convincingly confirmed by its successful decoding of a panel of coded serum samples prepared by Alter in NIH in the past; this has been used to test the validity of the previously described immunoassay for NANB hepatitis[10].

Currently, there are 2 ELISA tests available commercially to detect HCV: one from Abbott Lab and the other from Ortho Diagnostic System. This first generation assay, based on the use of the c100 polypeptides, can detect HCV antibody only after a long "window" period of 1 to 3 months, or even longer, after the onset of acute hepatitis. In fact, some cases have been reported to take more than a year to become seroconverted. Nevertheless, based on the studies of the stored sera, at least 80% of patients with a firm clinical diagnosis of NANB-PTH are anti-HCV positive[11]. A much lower frequency of seropositivity is noted in acute resolving NANB hepatitis, ie as low as 15% in the original study[2]. Several groups are at risk for acquiring HCV infection, such as iv drug-abusers, hemodialysis patients and hemophiliacs receiving multiple transfusions[12].

So far, homosexuality has not been shown to be a risk factor.

Blood banks in the USA have incorporated HCV testing into their routine of screening donors. In the 1970s, due to the high incidence of PTH (up to 20% of recipients), commercial blood was excluded and the incidence dropped to 10%. As blood was screened for HBsAG, HIV, and the so-called surrogate markers, ie HBcAB and ALT, the incidence dropped further to between 3% and 5%. It is estimated that it will drop into the 1% range as the result of HCV antibody screening.

However, there are pitfalls with this first generation assay. In addition to the prolonged interval between disease and serum conversion before the antibody can be detected, there are up to 20% of well-characterized NANB hepatitis cases that remain negative.

False positives were quite common in diseases involving hypergammaglobinemia, such as chronic autoimmune hepatitis. This ranged from 44% reported by Esteban-Mur and colleagues[12], and 78% of patients with type II chronic autoimmune hepatitis as reported by Lenzi et al[13]. Ikeda et al, in a letter to the editor in Lancet in 1990, suggested that this false positivity may be due to the reactivity to the superoxide dismutase moiety of the recombinant c100-3 fusion polypeptide used in the ELISA assay[14].

Because of this problems, a more sensitive assay was developed called RIBA, Recombinant Immunoblot Assay. This refined test detects an antibody directed against 3 recombinant antigens: The original c100-3, the 5-1-1 polypeptide in a fusion protein with superoxide dismutase and superoxide dismutase protein itself. This is now a so-called confirmatory test in some of the reports we have received.

There is a more accurate but technically more cumbersome test called PCR, Polymerase Chain Reaction assay. It is essentially an immunoamplification test. Advancement in genetic engineering technology has resulted in a novel way to detect minute amounts of genetic material and to sequence it by using commercially developed primers (oligonucleotides) to clone specific DNA rapidly, or in this case RNA, without the need for a living cell. It allows the RNA from a selected region of a genome to be amplified by more than a million-fold, provided that at least part of its nucleotide sequence is already known, through polymerase action.

Recently, in the International Symposium on HCV in Los Angeles, the Chiron group announced their successful use of a bacterial recombinant immunoscreening method to identify many other immunogenic regions of the HCV-encoded polyprotein. Subsequently, recombinant proteins derived from both the non-structural as well as the structural regions of the HCV polyprotein have been purified from recombinant yeast; specific individual radioimmunoassays for the circulating antibody have been developed.

Additionally, in the same meeting, Dr. Krawczynski from CDC, using fluorescein isothiocyanate (FITC)-labeled polyclonal IgG obtained from a patient with HCV hepatitis, and from chimps experimentally infected with HCV, has identified morphologically the hepatitis C antigen in hepatocytes. As early as 10 days after symptoms appear, HCV antigen can be detected in the hepatocyte. This is a very important tool used to study the pathogenesis and natural history of HCV[15].

**Summary**

An immunoassay for the detection of the majority of NANB-PTH cases is available now, although at least 20% of well-characterized NANB-PTH remains negative. False posotive cases in hypergammaglobinemic states in certain chronic active hepatitis are also common. The virus has been named hepatitis C (HCV). It is believed that there is at least another blood-borne viral agent that may be responsible for a smaller cohort of patients with NANB-PTH. It usually takes 1 to 3 months after onset of acute illness for HCV antibody to be

detected in serum. It is also known that close to 40% of the NANB hepatitis has no history of percutaneous exposure — so-called sporadic NANB hepatitis. More accurate and sensitive diagnostic tests are being developed commerically and should be available in the forseeable future. There is effective therapy for some of the patients with HCV chronic hepatitis.

As has happened in the history of the pursuit of the HBV virus, when the entire genome of the C virus becomes better understood, more specific immunologic tests will be developed for specific clinical conditions and then, finally, vaccination against HCV may not be that far behind.

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# Testing of blood donors for antibody to HCV: The Hawaii experience


Julia Frohlich MD



An ELISA test for the antibody to Hepatitis C virus (HCV) became available nationwide in May 1990 and was implemented by the Blood Bank of Hawaii in screening the blood from donors. Surrogate tests such as alanine aminotransferase (ALT) and hepatitis B core antibody (anti-HBc), as well as hepatitis B surface antigen (HBsAg), were already in use to screen donated blood. In testing 28,807 units of blood in 1990, 0.03% (3 in 1,000) were repeatedly found ELISA reactive for anti-HCV. Supplemental testing by a recombinant immunoblot assay (RIBA) found only one-third of these to be reactive. All donors with reactive tests are informed by the Blood Bank and urged to seek follow-up evaluation by consulting their personal physician.



President/Medieal Direetor
Blood Bank of Hawaii

Address reprint requests to:
Julia Frohlich, MD
Blood Bank of Hawaii
2043 Dillingham Boulevard
Honolulu, HI 96819


## Background

Hepatitis C virus (HCV) is the name assigned to the recently detected virus which is proving to be the primary cause of transfusion-associated non-A, non-B (NANB) hepatitis. Since the early 1970s, clinicians and scientists have recognized a form of post-transfusion viral hepatitis which tested negative for other serologic markers of hepatitis A virus (HAV) and hepatitis B virus (HBV). In the late 1970s, as many as 7 to 10% of transfusion recipients developed hepatitis; NANB was implicated in 90% of these cases. While most cases were sub-


*(Continued)* ➤

clinical, many recipients had persistent elevation of liver enzyme readings, indicating a high rate of chronic liver disease and the likelihood that the NANB agent produced a chronic carrier state[1].

In November 1981, in the absence of a specific test for the NANB agent, the Blood Bank of Hawaii implemented nonspecific "surrogate" testing by determining the alanine aminotransferase (ALT) level in each donated unit and disbursing for transfusion only those units with acceptable levels. This decision was based on findings from the 5-year Transfusion-transmitted Viruses Study published that year: that up to 40% of post-transfusion viral hepatitis could be prevented by not transfusing units of blood with elevated ALT levels[2]. Reanalysis of this study by its authors in later years led to the recommendation by the American Association of Blood Banks in 1986 to adopt ALT and anti-HBc as surrogate tests for NANB hepatitis[3]

### Identification of HCV

Identification of HCV took several years of persistent work by a team of scientists from the Chiron Corporation and the Centers for Disease Control. Their unique approach involved a painstaking search for circulating nucleic acid in plasma from experimentally infected chimpanzees. A DNA clone derived from RNA, whose antigenic product reacted with sera from NANB cases, was identified and found to be specific for the infection. This antigen product was in turn used to make test reagents for detecting virus-specific antibody (anti-HCV). It is now evident that the antibody detected is reactive with nonstructural viral protein[1].

The link to transfusion-associated NANB was clinched when the anti-HCV test successfully identified cases in a highly pedigreed panel of coded sera established by H. Alter at the National Institutes of Health. The test successfully identified 90% of the transfusion-associated hepatitis cases or their implicated donors[1].

**Table 1. Anti-HCV Prevalence Among Volunteer Donors to the Greater New York Blood Program (1985-86)**

| Donor Status | | % |
|---|---|---|
| ALT (IU/L) | Anti-HBc | Anti-HCV Positive |
| < 45 | Negative | 0.5 |
| ≥ 45 | Negative | 5.5 |
| < 45 | Positive | 5.5 |
| ≥ 45 | Positive | 44.7 |

**Table 2. Correlation Between RIBA Anti-HCV and Surrogate Tests Blood Bank of Hawaii (1990)**

| RIBA | No. of Donors | Abnormal Surrogate Test* |
|---|---|---|
| Negative | 40 | 3 ( 7.5%) |
| Intermediate | 23 | 5 (21.7%) |
| Reactive | 35 | 16 (45.7%) |

*ALT > 47 IU/L and/or reactive for anti-HBc

### Prevalence of anti-HCV

In 2,000 stored sera samples from blood donors at the New York Blood Center collected in 1985-86, 1.1% were reactive with the ELISA anti-HCV test. The prevalence correlated well with the ALT level and anti-HBc status of the donor (Table 1).

The lowest prevalence was found in donors who were negative for anti-HBc and had normal ALT levels; the highest prevalence was found in donors who had both anti-HBc and an ALT greater than 45 IU/L[1].

The prevalence in blood donors in other parts of the United States has been reported as follows: West Coast 0.6%, East Coast 1.0%, Southwest 0.4% and Midwest 0.4%.

### Implementation of HCV testing

We here in Hawaii implemented testing for HCV as soon as the licensed test arrived on May 5, 1990. By continuous, round-the-clock testing until May 7, all units of blood and blood components in Hawaii were tested; those units testing repeatedly reactive by this ELISA test were destroyed.

Since then, all units of blood are routinely tested for HCV. Donors with repeatedly reactive tests are informed of these findings by letter from the Blood Bank medical director, with a recommendation to see their own physician for follow-up. The letter includes the results of other hepatitis-related tests performed at the Blood Bank.

In July, further testing was made available to the Blood Bank: Recombinant immunoblot assay (RIBA) is an unlicensed supplemental HCV antibody test system which helps to differentiate false reactions from indeterminate and true reactions. We modified our initial letters to donors who had repeatedly reactive ELISA tests for HCV so as to include this supplemental RIBA information and its significance.

### The Blood Bank of Hawaii experience

In 1990, 98 donors/donations were found to be repeatedly reactive for anti-HCV, using the licensed Ortho ELISA system. Of these, 35 (roughly one-third) were also reactive by the RIBA anti-HCV test. Forty were RIBA negative and probably represented false reactions in the Ortho ELISA system. Twenty three were RIBA indeterminate.

In 16 of the 35 donors with repeatedly reactive ELISA and RIBA reactive tests, there were other abnormal tests. These "surrogate" tests (ALT and anti-HBc) had already been per-

*(Continued on page 253)* ➤

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As a leader in the application of new technologies to advertising, design, and publishing, WestPac personnel created the cover art and all typographic elements of this special supplement on its electronic imaging and page composition systems. Color separations were printed directly to film by a Linotronic 300 imagesetter from WestPac's computers. All type came from WestPac's in-house library of over 600 typefaces.

*FINANCIAL institutions operate in a tough competitive environment in Hawaii just like the rest of the country. They are developing new products and services to attract business customers which for many is the core of their business.*

*Clifford K. Higa, state commissioner of financial institutions, said the financial industry here in the Islands has become a "tough marketplace in recent years. A lot of non-bank companies are getting a greater share of business that used to belong to banks and other financial institutions."*

*Banks are seeing their market share eaten away by insurance companies, credit card businesses and industrial loan companies. In Hawaii, that also spells more competition than ever before from Mainland companies, many giants in their fields.*

*"That is part of the driving force behind banks looking into new product lines," Higa said. "It is also a big part of the reason trust companies have been authorized to sell insurance."*

*"Competition is very vigorous, and I expect it to get even more so as new product lines are introduced and more companies compete for financial business," he said.*

*"And with a lot of bank-like companies outside the industry offering financial products without the restrictions state and federal regulations put on financial institutions, there is a real question of how level the playing field is," Higa said.*

*In this competitive environment, financial institutions know they have to serve their customers and serve them better. They are eager to be partners with business owners and managers in their fight to control expenses and improve profits.*

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## American Financial companies to offer insurance and securities

Independent trust companies in Hawaii are getting a big shot in the arm from the passage of a new state law broadening the products they can offer.

Insurance and securities will soon be available to clients of American Trust Co. of Hawaii, Inc. and Bishop Trust Co. Ltd. as a result of bill S.B. 2008, which was passed by the 1991 Hawaii Legislature. Now, newly formed, separate subsidiaries of independent trust firms will be able to market insurance and securities as long as they follow specified guidelines. Trust organizations that are subsidiaries or departments of local banks, however, will not be allowed to market these financial products.

"The new legislation will enable us to provide an essential client capability we've badly needed all along," said local trust industry leader Robert R. Midkiff.

Midkiff is chairman and president of American Financial Services of Hawaii, Inc., which owns American Trust and Bishop Trust.

"Many of our clients need various kinds of insurance as well as guidelines in securities purchase and management to be able to attain their financial goals," he said.

Midkiff stressed that American Financial will not compete with the local insurance industry. "We'll be concentrating on providing our new services as an additional benefit to existing and potential trust clients— not to the general public."

Frank Hong, senior vice president of marketing for American explained how this will work: "Let's say that our client needs $100,000 to cover expenses and taxes on his estate when he dies. We've helped him plan his estate and we see there's a legitimate need for insurance to be placed in an irrevocable trust, which enhances favorable tax treatment.

"We'll refer our client to a list of insurance agents in our network, those we feel are most appropriate," he said, "and the client will make the selection. American Financial will receive part of the sales commission in return for the planning provided. We'll monitor the progress of the insurance installation to make sure it's a good fit for our client's needs," Hong said.

Stocks and bonds will be handled in a similar way, according to Midkiff. Clients needing securities to meet their financial objectives will be referred to a list of brokers American Financial feels is appropriate.

## GECC Financial builds new home loan program

Finance companies also are taking advantage of the demand for new and better financial products to give traditional banking entities a competitive run for their money.

For example, at the beginning of June GECC Financial Corp. introduced a new residential loan program for Hawaii, The Balanced Home Mortgage. According to executive vice president John Yap, this loan program was patterned after the Stable Home Mortgage loan program developed by GE Capital Mortgage Services which was



*"The new loan program gives borrowers a greater sense of security because there is more protection against payment shock than with other types of adjustable or floating rate loans."*

introduced on a nationwide basis in late January 1991.

"Our new program gives the customer some protection against rising interest rates," Yap said.

The balanced home mortgage is a fixed and adjustable blended rate loan, he said, combining a mortgage and a note.

"With long term interest rates down, it is more likely that interest rates will increase than decrease in the long term," he said.

With the new program, the interest rate for 50 percent of the loan is fixed and the remaining 50 percent of the loan is based on an annual adjustable rate tied to the prime rate of interest plus a margin. The term of the loan is five years, Yap said.

The objective of this program is to offer an affordable loan program that will encourage borrowers to take advantage of the home ownership opportunities that exist in today's market.

The blending of interest rate terms "gives customers the best of both worlds," he said.

"Home prices in most areas of Hawaii have stabilized with the result that more borrowers can afford homes," Yap said. "However, many are reluctant to make a major financial commitment due to uncertainty in the economy."

"The new loan program gives borrowers a greater sense of security because there is more protection against payment shock than with other types of adjustable or floating rate loans," he said.

Yap said GECC's Super Credit program also is popular, especially with smaller businessmen and professionals who are looking for the opportunity to borrow against their homes to help finance their businesses. "The program has given a lot of customers the chance to access the equity in their residences for business purposes," he said.

Yap said that the financial backing of the General Electric Co. is important to the operation of his company and its ability to offer such novel financial instruments. "Being part of a $70 billion company gives us unrestricted capital and a strong source of funding so we can consistently be in the marketplace," he said.

GECC has four branches on Oahu and one branch each on Maui, Kauai and the Big Island.

## Bancorp Hawaii dedicates business centers

Bancorp Hawaii Inc., holding company for Bank of Hawaii, stands alone in Hawaii's competitive financial market because of its business banking centers, according to vice chairman and credit policy committee chairman Jack Tsui.

The centers are dedicated exclusively to assisting local business financing and they have proved very successful for Hawaii's largest financial institution, he said.

Bancorp operates three of the business banking centers on Oahu, and one each on Maui and the Big Island, and one on Guam, he said. The centers emphasize service for local





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*"Businesses in Hawaii are quickly learning that it is not the ownership of assets that produces the income stream, it's the use of those assets."*

businesses with annual sales of $1 million to $10 million, he said.

Bancorp is the only financial institution in Hawaii offering such facilities, and he said customers like them because they are dealing with people who are experts and professionals in lending to mid-sized firms. They are able to offer uniquely tailored services because the employees assigned to them spend all their time specializing in nothing else.

"We have people who specialize in key industries including construction, tourism, manufacturing, wholesaling and retailing. We have people who have particular skills, eliminating a lot of wasted time and energy," Tsui said.

A second fact of business for Bancorp which customers find attractive is speed of response. "We have more lending outstanding in the field than anyone else in the market, and that gives us the knowledge to respond more quickly to customers," he said.

"Thirdly, we're cash flow lenders, versus asset lenders. An asset lender loans in proportion to the value of an asset, such as a building. We would say we want to loan against the income the asset will bring in," Tsui said.

Not many financial institutions in the country share Bancorp's sophistication in being able to make such loans, he said. "Understanding cash flow helps small business and helps make us a success," Tsui said.

Bancorp does a lot of work with borrowers whose loans are guaranteed by the U. S. Small Business Administration. It also has a venture capital subsidiary, the Small Business Investment Corp., and it "will pump venture capital into the right situations," Tsui said.

Such services are beneficial both for Bancorp and for local business; we want to see small businesses get started and succeed, not just for the bank but for the vitality of the local economy, he said.

## Leasing is high-tech at First Hawaiian

Non-traditional affiliates of local banking companies are not about to be left behind by competition from outside the traditional industry.

First Hawaiian Leasing Inc., a subsidiary of First Hawaiian Inc., is emphasizing the leasing of high-tech equipment, especially telephone and computer technology.

Executive vice president Steve Marcucilli said those two fields are particularly popular with customers because of the obsolescence that is built into high-tech equipment by manufacturers.

"Businesses in Hawaii are quickly learning that it is not the ownership of assets that produces the income stream, it's the use of those assets," he said.

At the same time, by owning equipment it leases to customers, First Hawaiian Leasing and First Hawaiian Inc., holding company for First Hawaiian Bank, can take advantage of the tax benefits that come from ownership and pass the savings on to customers, Marcucilli said. For First Hawaiian Leasing customers, that has the added benefit of cutting down on the cash flow they need to service their debt, he said.



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"You won't have that much to give Uncle Sam when you die," says Frank Hong, "but why give away even a dime in taxes if you don't have to?" Hong has produced a new seminar on living trusts: a two-and-a-half hour presentation that could save your estate tens of thousands of dollars in taxes and expenses that needn't—and shouldn't—be paid. The seminar is sponsored by American Financial Services of Hawaii, parent firm of American Trust Co. of Hawaii, Inc. and Bishop Trust Co., Ltd. Hong is marketing director and senior vice-president at American Financial.

"You can minimize this unnecessary and wasteful drain of estate tax dollars by using trusts." Hong says. "The seminar tells you how." The American Financial Services of Hawaii seminar is offered in Honolulu on certain weekday evenings and Saturday mornings. You'll learn a few things at the seminar that might shock you. For example the state of Hawaii will, by law, make distributions, according to an established procedure, from your estate to your heirs if you don't write a will. You probably won't agree with the state's decisions on who will get what.

Another jolting fact: If you own a house or condo, Hawaii's wildly inflated real estate prices (the highest in the nation) might well have pushed your house valuation and therefore your total estate value, into the red danger zone of heavy federal estate taxes. "Many home-owners don't realize they might not be able to pass the market value of their homes intact to their kids," Hong says. "Huge estate tax liabilities could force a home sale to pay taxes."

"That's what this seminar is all about—to alert our friends to take action now, while they still can." Seminar attendees will have an opportunity to schedule an appointment to update their will and set up a self-trusteed living trust with the help of local attorneys, and with trust officers from American and Bishop trust companies. This team effort makes the living trust affordable.

"This is a wonderful opportunity for a family to get its financial picture together, to benefit from the legal protections a living trust can provide," Hong says.

Seminar-goers will also learn how trusts can be set up for handicapped family members, or kids, or even for themselves later in life (neurological diseases such as Alzheimer's are taking a heavy toll among older people).

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"We do a lot of computer and telephone leasing because the equipment is superseded by new technology so quickly that customers don't want to take the risk of ownership. So we take the risk instead," Marcucilli said.

One particular product First Hawaiian Leasing offers that people find attractive, he said, is First Lease which is tailored specifically for people who use their automobiles 50 percent or more for business.

"We take the tax benefit of ownership and, using that, can pass on lower monthly payments to clients," Marcucilli said. "It is a lot easier for record keeping in part because no interest is paid, and depreciation is tracked by the leasing company."

And, if the lessee wants to buy the car at the end of the lease period, the contract makes that possible with a fixed price purchase option, he said.

"We've had a lot of success and a lot of demand for that product," Marcucilli said.

First Hawaiian Leasing uses the branch offices of its sister company, First Hawaiian Bank, as satellite sales offices.

"People in the branches assist us with the paperwork. Clients can go in and ask about the product and they'll be referred to us directly by telephone," he said.

There is uniform paperwork that customers can pick up in any branch office and sign the documents, assuming the credit terms and conditions are agreeable and that their credit is approved.

"First Hawaiian branches are very important to us and to our customers," Marcucilli said. "It's like having 47 satellite offices."

## Pioneer Federal Savings banks on traditional service

Al Yamada, senior vice president and chief financial officer of Pioneer Federal Savings Bank, said that while customers at all financial institutions in Hawaii are looking for products and services to fill their needs, they also still want the basics and are willing to bank on tradition.

"The most attractive products we offer customers right now are our checking accounts because they are totally free. Customers pay for the checks, but there is no minimum balance, no service charge and no limit on the number of check they can write," he said.

"Another item that we find very successful is our home equity line. Basically, we offer a very competitive home equity line program," Yamada said.

And Pioneer Savings branch operation is constantly being refined to better serve its customers.

"We recently relocated our Kaneohe branch from Foodland to the heart of Kaneohe Town. That should be more convenient and attract more Kaneohe customers," he said.

The new 1,500-square-foot branch office at 45-117 Kamehameha Highway is the first Pioneer Federal has opened since converting from a mutual to a publicly owned savings and loan association last year.

Previously, only Foodland shoppers and established Pioneer Federal customers were aware that the branch existed, "so now we are a lot more visible," Yamada said.

"In line with that relocation and renovation, we will be completing the renovation of our



# THE WORKS



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*In the administration of an employee benefit plan, there are three basic areas of responsibility: custodial trusteeship, administrative services and investment management.*

Kapiolani branch across from KGMB-TV. It'll be our second largest branch and we have planned a whole new look that is more modern in decor," he said.

Yamada said Pioneer Federal's business clients like its residential loans even though they tend to be geared toward individuals. "We offer a full line of both fixed-rate and adjustable-rate residential loans."

But customers seem to feel it is just as important that they are doing business with Hawaii's oldest savings institution. Pioneer was founded by King David Kalakaua in 1890, celebrated its centennial last year, and is starting its second century of operation now.

"Customers really find tradition at Pioneer appealing," Yamada said. "It helps us stress the fact that we are trying to promote quality services, just as we have for the past hundred years."

To enhance the quality of that service, he said, Pioneer Federal for eight months has intensively trained employees on customer service. The speed of service is definitely important.

And that is part of the reason its branch operation is so important, Yamada said. Pioneer Federal customers know they can go into the Downtown Honolulu headquarters branch or other branches in town where speed of service is critical and get the individualized attention they need.

"Or they can do business in Honolaa on the Big Island where speed may not be as important because it is a rural community, but where tradition still stands for a lot," he said.

## Benefit plans are valued at Hawaiian Trust

Hawaiian Trust Co., a subsidiary of Bank of Hawaii, is also tailoring its products and services to attract Island business. Since it can offer anything a Mainland trust company offers, there is no reason for residents to turn to out-of-state firms.

Tom Holden, manager of the employee benefit department of Hawaiian Trust, said his division provides the bulk of its services to Island businesses.

Managing an employee benefit plan is a tremendous responsibility, and may require more attention than a small business can or wants to devote to it. Whether that small business has a retirement plan, profit sharing, 401(k), ESOP or any other type of employee benefit plan, Holden said Hawaiian Trust is ready to help out.

In the administration of an employee benefit plan, there are three basic areas of responsibility: custodial trusteeship, administrative services and investment management.

Hawaiian Trust assigns a team of trained pro- fessionals to handle the various specialties re-quired for the full and proper administration of a program, including trust administrators, administrative staff and investment officers.

An experienced trust officer is the key to the successful operation of a benefit plan. The team of officers and staff at Hawaiian Trust is dedicated to meeting a business's objectives with professional and personalized service, Holden said.



*In setting objectives, businesses have to make a key decision about the return they want to earn and the risk factor they are willing to tolerate.*

Since 1898, Hawaiian Trust has earned the solid reputation of producing bottom-line results as investment managers. It provides a complete range of investments to meet the objectives of any employee benefit plan. The various investment vehicles are combined into coherent portfolios designed to meet specific objectives.

In setting objectives, businesses have to make a key decision about the return they want to earn and the risk factor they are willing to tolerate. Holden said Hawaiian Trust is ideally situated to help businesses face that question and make the appropriate decision. "They have developed the Investment Management Profile System which quantifies the risk level or volatility versus the reward to help businesses make their investment decision," Holden said.

"Our methodology is fairly unique, and it is specifically designed to help customers adopt the strategy that will be most comfortable for them," Holden said.

Tom Macdonald, executive vice president of Hawaiian Trust, said that a key for businesses choosing a financial institution to manage its employee benefit plans is the ability to communicate the benefits to employees. "That is where the employer gets value – to help him compete in this labor market, and to help compete for the small pool of competent employees – as a recruiting and retention tool."

## First Hawaiian Credit fills land-loan niche

Finance and credit companies also are tailoring new products and redesigning old ones to better meet client needs and attract Island business.

At First Hawaiian Creditcorp, a subsidiary of First Hawaiian Inc., executive vice president Winston Chow said he looks for specific programs to fit client needs, especially business customers.

He said a particularly popular product in today's market are land loans which, more and more, are being requested by customers.

"People are buying properties all over the state. And financing the building of new homes is less expensive for them than buying an existing homes," Chow said. In addition, that way they can design their own homes to fit their tastes, he said.

First Hawaiian land loans are made just for clients to buy the land on which they want to build. Then the buyer develops plans for their new homes, after which they can take out construction loans "or we can do a combination and give them a permanent, 30-year mortgage loan all rolled into one," he said.

Chow said membership in the new $50 million non-profit Hawaii Community Reinvestment Corp. will help his firm make longer-term residential loans. The fund was formed to provide funding for affordable, multi-family housing in Hawaii.

He said First Hawaiian Creditcorp tries to help clients solve problems they face, especially cash flow shortages, capital limitations and asset acquisition needs.

But whatever the financial products offered, Chow said it is important for a financial






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*Whatever the financial products offered, it is important for a financial institution to have experienced loan officers and branch managers who are really problem solvers for their clients.*

institution to have experienced loan officers and branch managers who are really problem solvers for their clients.

"And our managers and officers work closely with affiliates including First Hawaiian Leasing Inc. and First Hawaiian Bank," he said.

Chow said fast response also is important to customers, and that First Hawaiian Creditcorp tries to complete the documentation needed to make loans within eight to 10 days. Unfortunately, tighter federal regulations requiring independent appraisals are slowing down the process. And it is the combination of fast, accurate responses and tailored products that are First Hawaiian's strong suit. "We assign a loan officer to stay with our business clients all the way through the process," Chow said.

"Most of our clients are small to medium-sized companies, and our loans usually fall in the range of $500,000 to $5 million," he said. "We try to help clients solve their problems primarily through equity financing in real estate."

He said the Investor Credit Line is one of the most popular products. "It uses commercial, income-producing property to secure the loans for business people to use for cash flow and equity," Chow said.

## American Savings shows professionals priority

At American Savings Bank, vice president for corporate banking Bob Tsukada said his thrift's concentration is in providing services to professionals including doctors, attorneys and certified public accountants. It has offered business loans for only seven years, but it has made this lending user friendly by sending loan officers into the field to visit clients and potential clients.

It has deliberately stayed small in the field of business loans to preserve that personal contact, but customers can go into any branch to transact commercial business. And it has tailored its services to the needs of the small business, the niche it has targeted for its lines of credit to be used for working capital and for equipment needs.

"The primary area we are concentrating on at this point in time is making preferred loans with preferred interest rates," Tsukada said. Generally, the preferred interest rate is offered to established customers or individuals with whom American Savings wants to do business and who it will be soliciting.

"Doctors may need financing to cover liability insurance premiums or the cost of moving to larger offices. They may also need money for improvements or even working capital if necessary," he said.

"In addition, we provide lines of credit to cover short term working capital that working professional may need. Working professionals are a real priority item for our department right now," Tsukada said.

"Such customers are attracted to American Savings in part by the service it can offer them," he said. "They want to be recognized and provided with a loan officer who they can work with closely. They need someone they can always call and respond to their credit need quickly," he said.



*Within each portfolio, investment dollars are allocated between stock, bond and money market funds to help reduce risk and to increase returns.*

In addition, the land loans which American Savings has been advertising in local print outlets are popular with professionals, especially young professionals, looking for ways to finance their housing needs. Tsukada said American Savings is offering such loans on terms that are competitive with any other local financial institution.

With its acquisition of the branches and deposits of First Nationwide Bank last year, American is in a position to offer all these products and services to professionals and small businesses on all major Hawaiian Islands through its network of 45 branch offices. The First Nationwide acquisition helped American Savings position itself to reach a larger community with the products it already had found to be popular.

## First Hawaiian Trust taps top investment pros

First Hawaiian Leasing is not the only First Hawaiian Inc. operation competing for business outside the traditional field of banking. The First Hawaiian Trust Group, in particular, is offering an innovative product, the Investment Monitor Account.

Jerrold A. Fuller, vice president and investment officer for the group, said that "no one else in town offers a program like ours." It was designed to fill a gap, and lets First Hawaiian get top investment managers in the country to manage accounts ranging in size from $50,000 to $1 million.

The Investment Monitor Account is an innovative blend of institutional mutual funds, tailored to an individual customer's objectives and monitored continuously for their performance by SEI Corp., the country's largest institutional investment fund monitoring service.

An IMA client can choose from five different investment strategies: maximum growth, growth, balanced, conservative and maximum income. First Hawaiian will consult with each customer individually to review his or her investment objectives, then recommend the IMA portfolio best suited for those objectives.

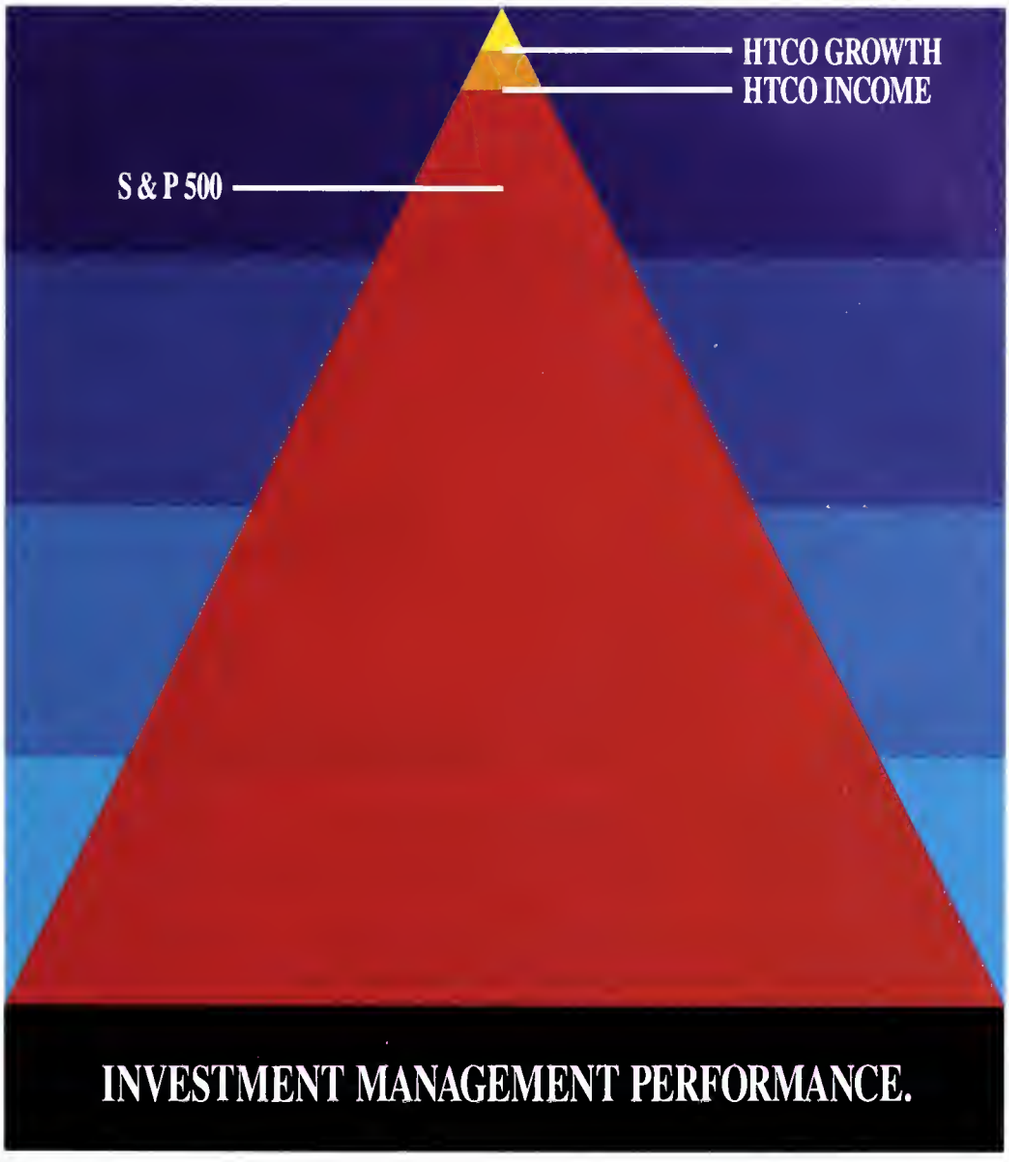
Within each portfolio, investment dollars are allocated between stock, bond and money market mutual funds to help reduce risk and to increase returns. As the economy changes, the investment mix will change to keep the investment objective on course.

Philip Ching, First Hawaiian executive vice president, said there is a trend today for banks to offer more non-traditional bank products. "Many customers want to invest some money in the stock market, but they still want the objectivity a bank can offer. We believe that there is definitely a market for this type of product here, given its flexibility and convenience.

"This, combined with the SEI's impressive track record, gives the prudent investor an opportunity to invest wisely, and adjust his portfolio, without incurring brokerage commissions or sales charges," he said.

SEI Corp. is the country's oldest and largest independent investment management consulting firm. Headquartered in Philadelphia, it monitors the performance of more than 5,000 portfolios for institutional clients, including the Hawaii State Employee






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**Ranking from CDA Investment Technologies of Mutual Funds, Banks and Insurance Companies for the five year period ended 12/31/90 for Growth and Income Stock Funds. The funds measured are Trust Funds available only to fiduciary accounts (trusts, estates, guardianships) and are not mutual funds available to the general public. Performance figures are total returns, capital appreciation plus dividends reinvested; and exclude any capital gains taxes and fees. Past performance is no guarantee of future performance, which may be better or worse.*

**Hawaiian Trust Company, Ltd.**

*Personal Trusts Investments Pension and Profit-Sharing Trusts Estates Guardianships Reserve Funds*

*In tomorrow's business environment, financial institutions know they have to serve customers and serve them better— better than in the past and better than the competition.*

Retirement System fund and more than 34 percent of the country's largest 100 largest banks. SEC was ranked by BusinessWeek magazine in 1989 as number one in the non-bank financial services category for research and development.

Fuller said that between 1981 and 1990, the maximum growth strategy funds grew at a rate of 20.9 percent, compared with a growth rate of Standard & Poor's 500 Index of 13.8 percent.

And the Investor Monitor Account, thereby "brings a superior product to the small investor," he said.

## The Challenges Ahead

The coming year promises remarkable change and increased competition in the financial services industry. They are offering new products and services, opening new branch offices and actively soliciting new customers, especially in the small business community.

For all companies doing business in Hawaii, that represents a remarkable opportunity that is likely to increase with time. For financial firms, it represents a challenge, a challenge to develop new product lines and attract new customers.

It is impossible to say for sure what changes are likely to take place. But the fact of change is certain and the rewards for the victors in the competitive marketplace are very likely to be significant.

And all the changes are likely to boil down to one continuing fundamental. In tomorrow's business environment, financial institutions know they have to serve customers and serve them better– better than in the past and better than the competition. They want to be partners with business owners and managers in the continuous campaign to control costs and improve profits because that, after all, is the bottom line.



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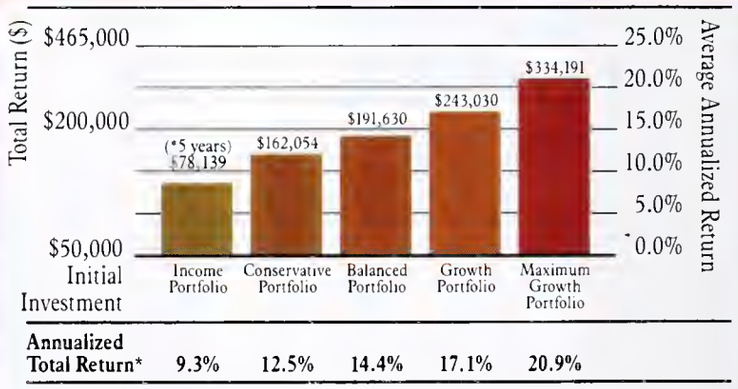
Instead, it will be managed and monitored by a team of First Hawaiian Bank investment specialists in concert with SEI Corporation, the nation's oldest and largest investment monitoring firm. (SEI monitors over 5,000 portfolios for some of the nation's leading institutional investors.) Together with SEI, First Hawaiian will make sure that only the most consistent, top-performing mutual funds are being used for your portfolio.

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You'll have a choice of five investment portfolios or strategies, each of which will use a blend of selected funds. Here's how these portfolios of SEI-Monitored Funds have performed over 10 Years* (1981–1990). (Assuming initial investment of $50,000.)




| Annualized Total Return* | 9.3% | 12.5% | 14.4% | 17.1% | 20.9% |
|---|---|---|---|---|---|

*Performance results for some years used comparable stock, bond, and money market historical indices, where an SEI fund had not been in existence for the full 10 years. Performance results for the Income Portfolio are for 5 years only. All securities markets are subject to fluctuations; therefore past results are not indicative of future performance.

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INVESTMENT MONITOR ACCOUNT

formed on every donated unit. Thus, almost half of the units with anti-HCV would have been discarded and not transfused anyway (Table 2).

By contrast, of those units with repeatedly reactive ELISA but negative or indeterminate RIBA tests (40 + 23 = 63), abnormal results in the surrogate tests were found in only 8 (12.7%).

During this period of time, 28,807 units of blood were collected, with a prevalence of repeatedly reactive anti-HCV test by ELISA of 0.03% (or 3:1,000 donations). A third of those were confirmed to have antibody to HCV by RIBA for a frequency of 0.01% (or 1:1,000).

### Lookback

In addition to informing all donors of abnormal test results, the Blood Bank has undertaken a "lookback" procedure if the donor gave blood prior to the availability of the HCV test. In the lookback, the intent is to notify former transfusion recipients that there may have been a risk of contracting HCV from the earlier transfusion. Although we are unable to determine when the donor was infected with HCV or whether a reactive HCV test truly means infectivity, follow-up of these patients is recommended for the following reasons:

(1) HCV is usually subclinical, so the patient would not be coming in to see the doctor, even if infected.

(2) HCV is often associated with chronic liver disease (30-50%)—a much higher incidence than with HBV. HCV is also associated with primary liver-cell carcinoma.

(3) There are recent studies reported in the New England Journal of Medicine that offer hope of treatment of chronic NANB hepatitis with alpha interferon[4,5].

Our standard lookback procedure is as follows: The Blood Bank contacts the hospitals, provides them with unit numbers, transfusion dates and blood products transfused from donors in the past whose blood today is ELISA and RIBA reactive for anti-HCV. The hospitals, in turn, are to notify physicians to advise their patients of the possible exposure to HCV. This 2-step procedure is necessary, since the Blood Bank of Hawaii does not have a file of the names of recipients of blood products. We have suggested to hospitals, in their message to physicians, that information about HCV be given, and to include especially the recommendation that their patients be notified of the possible exposure and the importance of follow-up.

We realize that not all who have given blood will return to donate again. Thus, HCV may have been transmitted to patients whom we would not be able to identify through our usual lookback procedures. We therefore recommend that physicians include, as part of their general medical history, questions that relate to blood transfusion. This information may have clinical significance that relates to HCV as well as providing a basis for future expansion of scientific knowledge about possible transmission of infectious agents through blood transfusion. There are steps that can be taken today, and should be taken, to treat these patients, as well as for the protection of their family members (eg vaccination against HBV, alpha interferon treatment for HCV, etc).

As the sole provider of blood products to all civilian hospitals in Hawaii, the Blood Bank wants physicians to feel confident that blood for transfusion to their patients is the safest possible. As new and refined tests and procedures are developed and approved for blood bank use by the Food and Drug Administration, physicians can be assured that we will continue to adopt such for the well-being of Hawaii's patients. When a lookback becomes necessary, we hope you will offer continued support and assistance.

The Blood Bank of Hawaii is licensed and regulated by the Food and Drug Administration and is an accredited member of the American Association of Blood Banks and the Council of Community Blood Centers.

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■



"DO YOU PROMISE TO LOVE, CHERISH, AND PROTECT HER IN SICKNESS AND IN HEALTH AND UNTIL MEDICARE CAN TAKE OVER?"

# What to do with the patient with a positive HCV antibody test

Daniel L. Phillips MD

*A test to measure hepatitis C antibody has recently been developed. The development of the antibody test was closely followed by the publication of two trials which demonstrated the efficacy of interferon alfa in the treatment of transfusion-associated hepatitis C. The author discusses management of the patient with a positive hepatitis C virus (HCV) antibody test, including an approach to sorting out those patients who have false positive tests, information about modes of transmission for those patients who are asymptomatic carriers, and guidelines to determine which patients may be candidates for interferon therapy.*

Physicians will begin to hear from more and more patients who have been found to have antibody to hepatitis C virus. These individuals understandably will be concerned about the implications of their positive test. It is the obligation of their personal physicians to address that concern, decide whether further investigation is necessary and plan an evaluation when it is appropriate. It is the purpose of this article to make this task easier.

There are two test kits used by the main laboratories in Hawaii to determine the presence of HCV antibody. They are made by different manufacturers. The Ortho Diagnostic Systems (ELISA) assay is used by the Blood Bank of Hawaii; the Abbott Labs (EIA) assay is used by Diagnostic Laboratory Services (DLS); and by SmithKline Beecham (Accupath) Labs.

Although the mechanics of how the tests are performed are different, both kits are based on work done at Chiron Corporation laboratories. In 1989 researchers there reported the isolation of non-A non-B (NANB) hepatitis viral RNA, made cloned DNA, produced polypeptide that coded by this DNA and identified antibody against this polypetide in patients with NANB hepatitis[1,2]. The commercially available test kits use an enzyme-linked immunoassay technique to identify circulating antibody to this HCV specific polypeptide.

There are several important facts to be realized about the anti-HCV test:

1) Antibody to HCV develops in approximately 50% of patients with acute hepatitis C and most lose the antibody after the acute illness resolves. In contrast, patients with chronic hepatitis C have persistent antibody. Thus, the presence of antibody to HCV does not generally represent immunity, but more often suggests chronic infection[3,4,5].

2) There is a significant false positive rate. As many as 30 to 60% of positive ELISA tests found among blood donors in Hawaii are thought to be false positives[6]. Furthermore, patients with autoimmune hepatitis and paraproteinemias are said to have a high frequency of false positive tests[7,8,9].

3) There is a significant false negative rate. Approximately 20% of all cases of post-transfusional hepatitis will have a negative test for HCV antibody. Part of this 20% is accounted for by another hepatitis virus (neither A, B, nor C), but it is clear that the HCV antibody test may fail to identify patients who unequivocally have hepatitis C. There are at least two reasons this occurs. Some patients may take up to one year, or fail altogether, to develop HCV antibody despite having epidemiologic evidence of having post-transfusional hepatitis C. Alternatively, the available commercial assays may be insufficiently sensitive to identify individuals with low titers of antibody[4,10].

The problem of false positive ELISA tests has lead to the development of other techniques to identify and confirm anti-HCV positive patients. The best studied of these is the recombinant immunoblot assay (RIBA) which has not yet been approved for clinical use by the FDA. Reports suggest that patients who are ELISA and RIBA positive are more likely to have HCV hepatitis than patients who are positive for the ELISA assay only[11,12].

However, it is important to realize that both false positives and false negatives may occur despite the results of the ELISA and RIBA assays. The Blood Bank of Hawaii automatically sends all ELISA positive specimens to a reference lab for RIBA testing. DLS found that specimens strongly positive on the initial EIA assay, in their patient population, nearly always had positive supplemental tests and, therefore, it sends only specimens which are weakly positive on EIA for additional testing. SmithKline Beecham does not do supplementary testing for specimens found positive on the initial EIA assay.

So what are we to do with the patient who is found to be HCV positive?

Division of Gastroenterology
Department of Medicine
John A. Burns School of Medicine
University of Hawaii
Honolulu, Hawaii

Address reprint requests to:
Daniel L. Phillips MD, Chairman
Liver Research Group
Cancer Research Center
1236 Lauhala Street
Honolulu, Hawaii 96813

The first step is to do a careful history and physical examination in looking for risk factors for HCV and signs and symptoms of chronic liver disease. A history of prior blood product transfusion, i.v. drug use, multiple sexual partners or sexual contact with a person with hepatitis, membership in a household where another individual has hepatitis, as well as employment as a health-care worker, have all been suggested as risk factors for HCV.

The second step is to determine the serum ALT. If there are no apparent risk factors for hepatitis C; if the ALT is normal and if RIBA testing was negative, the most likely explanation is that the HCV antibody test was a false positive. However, because hepatitis C is typically associated with irregular elevations of transaminases, and since liver disease has been observed to occur in patients with transiently normal ALTs; one should repeat the ALT every 3 months (Esteban-Mur JI, Second International Symposium on HCV, Los Angeles, November 1990). If the ALT is persistently normal for a year, no further follow-up is needed.

In the same case (anti-HCV positive, normal ALT), if the RIBA test was positive, the patient may have recovered from hepatitis C but unlike most patients, has persistent antibody. Alternatively, the patient may be an asymptomatic carrier. The appropriate response is to monitor the ALT periodically to be sure that it is persistently normal.

One should also advise that the patient may be an infectious carrier in order to educate him or her about presumed modes of transmission. We know that parenteral transmission is the most frequent, but other modes of transmission must exist, as at least 40% of patients do not have a recognized risk factor for hepatitis C[13].

The role of sexual transmission is unclear. The homosexual population does not appear to be at increased risk for HCV hepatitis and spouses of patients with hepatitis C do not have a higher than expected rate of antibodies to HCV[14,15]. On the other hand, there is a report that more patients with NANB hepatitis have a history of multiple sexual partners or sexual contact with someone with a history of hepatitis than does a control population[16]. Thus it is prudent to advise patients to use safer sexual practices until further information is available.

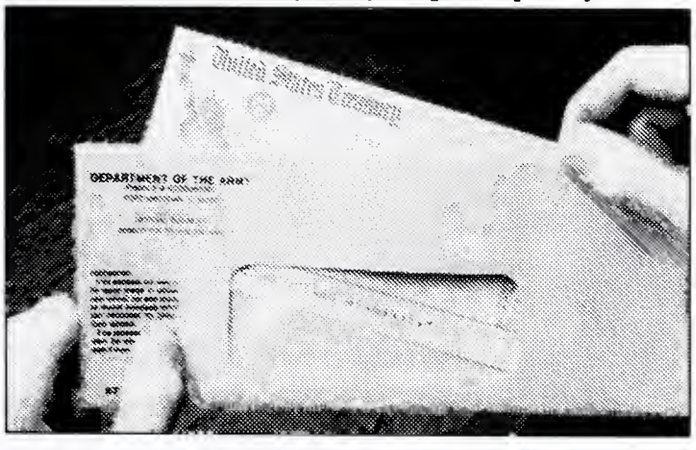
Maternal-neonatal transmission has been reported to occur 50% of the time but does not result in chronic hepatitis in the infant[17], as reported by Roggendorf at the Second International Symposium on HCV.

When the patient is anti-HCV positive and has an abnormal ALT, other causes of liver disease must be sought because of the chance of a false-positive antibody test. Diseases that should be considered include hepatitis B, hemochromatosis, Wilson's disease, alpha 1 antitrypsin deficiency, autoimmune hepatitis, primary biliary cirrhosis, primary sclerosing cholangitis, drug hepatotoxicity, fatty liver, alcohol-induced liver disease, thyroid disease, syphilis and infiltrating processes. Appropriate serologic tests and an imaging study such as ultrasound or CT-scan should be considered. The patient should have ALTs rechecked every 2 months. If the ALT returns to normal and stays normal over the course of a year, the patient may have recovered from hepatitis C, or may have become a chronic asymptomatic carrier. These patients need

*(Continued)* ➤


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**ARMY RESERVE MEDICINE. BE ALL YOU CAN BE.**

to receive the information about disease transmission as described above and should have a repeat ALT every 6 to 12 months.

What then about the patient who is HCV positive and has a persistently or intermittently abnormal ALT over a period greater than 6 months? If a thorough evaluation has ruled out other causes of liver disease, and the patient has a positive RIBA test, it may be assumed that the patient has chronic hepatitis C. The question then becomes what if anything should be done about it? To answer this, one must first understand the natural history of untreated chronic hepatitis C and what potential treatment there is to offer.

We know that at least 20% of patients with chronic hepatitis C will eventually develop cirrhosis[13]. Furthermore, there is increasing evidence that chronic hepatitis C is associated with the development of hepatoma[18,19]. Treatment that eliminates the carrier state is the ultimate goal and would theoretically prevent the development of cirrhosis and hepatocellular carcinoma. Until recently, there was no test for the presence of viral RNA (although PCR technology has made this now possible on a research basis). Investigators therefore have relied on a normal ALT and improvement in hepatic histology as markers of successful treatment.

Studies on treatment with acyclovir and steroids in patients with chronic NANB hepatitis have found that neither drug is effective[20,21]. On the other hand, 2 randomized controlled trials have recently shown that interferon is effective in controlling disease activity in a significant number of patients with chronic hepatitis C[22,23]. These trials used interferon at doses of 1, 2, and 3-million units given 3 times weekly for 24 weeks. The response rates (normalization of serum ALT) were 28%, 48%, and 46% respectively with a 10% placebo response.

Improvement in liver histology was also seen. Unfortunately, only 20 to 50% of those whose ALT values become normal, maintained those values over the 6 to 12 month follow-up after treatment ended. Side effects were common and included flu-like symptoms, diarrhea, mild alopecia and occasional thrombocytopenia; but dose reduction or withdrawal from the study was rarely required. Future trials will focus on finding the ideal dose and duration of treatment to improve response rates and remission maintenance.

The patient with chronic hepatitis C should, therefore, be advised not only how to prevent further transmission of the disease but also of the option of treatment with interferon. Some clinicians would argue that the long-term effects of treatment with interferon for this disease are not well enough known to be recommended for anyone (Koretz RL, comment in *Hepatology* 1990; 12:613-615). However, the FDA has recently approved interferon for use in hepatitis C. Given the significant incidence of an adverse outcome in untreated disease, many patients will wish to consider this potentially beneficial treatment for themselves.

Which patient with hepatitis C is a candidate for treatment with interferon? Treatment criteria at a minimum should include: A pretreatment liver biopsy that shows chronic persistent or chronic active hepatitis and/or cirrhosis; at least 6 months of documented elevation of ALT greater than 1.5X normal; careful exclusion of other causes of liver disease; no history of CNS trauma, depression or other major medical illness; a normal creatinine; age greater than 18 and not pregnant; HIV and HBsAg negative, WBC >3,000, platelet count >70,000, stable liver disease (ie, no evidence of ascites, encephalopathy or variceal bleeding, bilirubin <2.0, prothrombin time <3 seconds greater than control); normal TSH and T4, and HCV antibody-positive confirmed by RIBA.

Should a decision to treat be made, the Davis and Di Bisceglie trials suggest that 3-million units of interferon be administered subcutaneously 3 times a week as the appropriate treatment regimen.

However, the optimal dosage of interferon has yet to be defined. No one knows yet how the drug will work in Hawaii's ethnically diverse population, and there are no data on what to do for those who fail to respond initially or who relapse on termination of therapy. Furthermore, the drug carries with it potential toxicity, and much remains to be learned about the natural history of treated and untreated disease.

We believe, therefore, that physicians who plan to use interferon on patients should follow specific treatment guidelines, enroll patients in controlled trials when such trials are available, and that data on patients should be collected and recorded in order to help answer the many questions about hepatitis C and its treatment.

The Liver Research Group of Hawaii was created to answer this need (see the appendix below).

**APPENDIX**

In the fall of 1990, a group of physicians interested in the treatment of patients with liver disease came together and, with assistance from the Cedars-Sinai Medical Center in Los Angeles and the Cancer Research Center of Hawaii, formed the Liver Research Group. It is the intent of this group to make the latest treatments for chronic liver disease available to patients in Hawaii. The Liver Research Group encourages physicians who take care of these patients to contact its office at the Cancer Research Center (548-8545) for further information about enrolling patients in clinical trials or obtaining specific guidelines for the use of recently approved treatments such as interferon in chronic hepatitis C.

The 1990s have seen an explosion of knowledge about Hepatitis C. We now have potentially an exciting treatment for this previously untreatable condition. We in Hawaii are in a position to add to this fund of knowledge as well as offer our patients state-of-the-art care. However, we must recognize our responsibility to "first do no harm", treat according to the best scientific principles, and where knowledge is deficient, to collect data so we can care for future patients more effectively.

ACKNOWLEDGEMENTS

The author wishes to thank Dr John Vierling and Dr Fred Villamil of the Cedars-Sinai Medical Center in Los Angeles, and members of the Hawaii Liver Research Group for their advice in the preparation of this manuscript.

For readers interested in further information, the charter of the Hawaii Liver Research Group follows:

**Chronic Liver Disease Research Group**

The Chronic Liver Disease Research Group will be established to foster the study of treatment and prevention of chronic liver disease and its consequences. Of particular interest to the group are treatments which interrupt the progression of chronic viral hepatitis to cirrhosis and hepatocellular carcinoma. The group will also help advise those individuals involved in the care of patients who are candidates for liver transplantation.

**Background:**

The initial funding for the research group has been made possible by a donation from the Cedars-Sinai Medical Center. This funding includes money for salary and overhead for a nurse study coordinator. The nurse coordinator will be based at the Cancer Research Center in Honolulu, Hawaii.

The need for such a research group is clear. 1) Hawaii's unique ethnic diversity, relative geographic isolation and high carrier rate for hepatitis B, make it an ideal place to study the effects of potential treatment and natural history of chronic liver disease. 2) Several potential treatments for liver disease for which we have had nothing to offer before, are now in the process of development. These treatments are promising enough that they should be made available at the earliest possible time to patients in Hawaii. However, these treatments should be conducted in the setting of clinical trials until enough data has been generated to standardize their use. 3) No center is now performing liver transplantation in Hawaii. There is a need for a central repository of information about Mainland transplant centers. There is also a need to have personnel familiar with the pre-transplant screening process and mechanics of referral for liver transplantation. This would allow for the best use of the health care facilities in Hawaii before referral to Mainland centers for transplantation.

**Structure**

A nurse coordinator will be hired. This individual will be responsible for maintaining records of ongoing research protocols. The nurse coordinator will remain in contact with the originating investigator. By going to physician offices, helping to draw blood if necessary and gathering data from the individual physicians, the N-C will facilitate the broader availability of treatment protocols while making it possible to study treatment strategies in a useful and meaningful way. The N-C will make sure that the protocols are being followed correctly and will send data to the original investigator. The N-C will be responsible for making the availability of research protocols widely known to physicians in the community. The N-C will help in processing protocols through any appropriate institutional review board.

The activities of the nurse will be supervised by the chairman of the Chronic Liver Disease Research Group. This chairman will be appointed by committee. The committee will be composed of interested individuals representing a broad spectrum of physicians involved in the treatment of patients with chronic liver disease. In addition to electing a chairman, the committee will encourage investigators to submit research protocols for approval. Approved protocols will be eligible for assistance from the N-C. The committee will approve protocols on the basis of the following priorities:

1) Scientific merit.

2) The applicability of the research to patients in Hawaii.

3) The uniqueness of the research proposal.

4) The potential benefit of the treatment. As an example: a proposal for a promising treatment in a condition for which there is now no effective treatment would receive a priority rating.

5) The proposal must have received approval from an institutional review board most appropriate to the individual(s) originating the proposal.

A reassessment of ongoing protocols at 6 months will be undertaken by the committee to ensure that the original approval is still appropriate.

**Final comments**

The funding for this organization has come from the Cedars-Sinai Medical Center. Academic support and a number of research protocols will also be provided by Cedars-Sinai Medical Center. However, the committee will consider proposals from other investigators in Hawaii and from other institutions based on the elements described above. Should patients involved in treatment protocols require liver transplantation, the personal physician will retain the right to refer the patient for whatever treatment and to whatever institution the physician feels is in the best interest of the patient.

The funding is for one year. At the end of that time the relationship with Cedars-Sinai Medical Center and the performance of the liver research group will be reevaluated. It is hoped that this relationship will have been a productive one and that the funding and academic support will be continued. It is also hoped that other sources of funding may also be found which would allow for a greater scope of activity, and the creation of a permanent entity, The Liver Research Center.

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■

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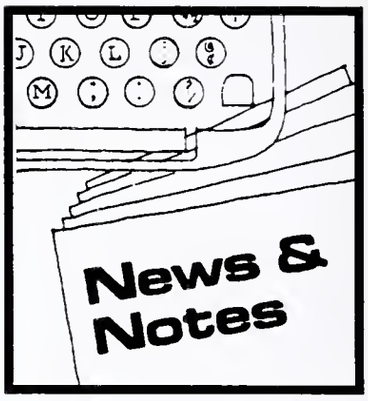
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## Life in These Parts

"When Dr. Sam Allison, retired dermatologist turned 80, his family gifted him with a new set of hair for his bald pate ... The thing is long and frizzy and a mixture of gray and black, but it's more hair than Allison has ever had before — should he choose to wear it..."
(From Honolulu Star-Bulletin by Dave Donnelly)

## Professional Moves

DECEMBER: Straub announced the appointments of the following new physicians: Cardiologist Roger Ashmore, internist Cathy Ow, emergency physician Robert Sussman and hospital service physician Mitchell Levy ... The Medical Arts Clinic added FP Teresa Wertheimer to their Mililani Town Center Clinic ... The Bone and Joint Clinic of Hawaii including orthopods Kent Davenport, Morris Mitsunaga, Clifford Lau and John Smith, announced their relocation to Queen's POB II effective December 27...

JANUARY: With the opening of Queen's POB II, we saw the following mass migration of physicians: OB-Gyn Robb Ohtani, Nathan Fujita and Norman Sato moved into Suite 402... Cardiologists David Fergusson and Roy Kamada relocated to Suite 504... Cardiologist Raymond Itagaki moved into Suite 609; cardiologist Robert Hong moved into Suite 306... Urologist Kent Teruya moved into Suite 508; gastroenterologist Howard Minami moved into Suite 605; otolaryngologist Alfred Liu into Suite 407; endocrinologist David Fitz-Patrick moved into Suite 304; general surgeon Peter Halford into Suite 706; plastic surgeon Don Parsa into Suite 807; and internist Glen Sugiyama into Suite 203... The exodus continues ... Urologist Thomas Ito relocated his Pearl City office to Pali Momi Medical Center Suite 460; pediatrician Paul Chan joined the Pearl City Medical Associates at Pali Momi Medical Center Suite 555; internist Birendra Singh Huja moved from 1270 Queen Emma to King McKinley Building Suite 312 and Island Cardiology including John Cogan, Joana Magno and Lee Guertler associated with internist William Sage at Century Square Suite 1610.

FEBRUARY: Urologist John Edwards Jr relocated his Urology Clinic to Queen's POB Suite 1008...

MARCH: The Anesthesia Associates relocated to 1541 South Beretania Street, Suite 215-216...

* * *

The Year of the Ram is with us ... The ram symbolizes comfort, peace and complacency ... Those born in the Year of the Ram are tender, kind, timid, not competitive, but compassionate, generous and well-loved. They are elegant, accomplished in the arts and financially successful...

In March, Straub announced their newest physicians: Richard Heibel, cardiologist; Lawrence Levin, rheumatologist; Randolph Wong, plastic and reconstructive surgeon ... Infectious disease specialist Cecilia Shikuma opened at KMP Suite 301 ... Danilo Ablan (specializing in critical care medicine and pulmonary diseases) and Mary May Ablan (pediatric and adult allergist) opened the Center of Allergy and Respiratory Diseases (CARD) at Liliha Medical Building, 1712 Liliha Street, Suite 103 and at Saint Francis West Medical Plaza, Suite 103 - LHS ...

## Miscellaneous Humor

Re Lawyers: "Some physicians direct their patients to lie always on the ride side, declaring that it is injurious to health to lie on both sides ... Yet lawyers as a class enjoy good health."

Re Senators: "There's only one person who can speak louder than a senator and that's another senator."

Re Bank: "The institution where you can borrow money if you can present sufficient evidence that you don't need it."

## Honored, Elected and Appointed

WHO MADE A DIFFERENCE

Terry Shintani was one of 10 individuals selected by the Star-Bulletin editors for bringing about controversy and change in 1990. Terry joined the Waianae Comprehensive Health Center 4 years ago and, as the center's director of preventive medicine, he has tried to reverse the dire health statistics of Hawaiians ... Through a pilot project diet, Terry showed that high-risk Hawaiian patients could lose an average of 15 pounds in 3 weeks by eating the same foods their ancestors ate. The Center has received a major research grant from the National Institute of Cancer and will host an international diabetes conference in 1993. He was honored as "Outstanding Non-Hawaiian of the Year" by the Association of Hawaiian Civic Clubs. Terry saw the critical role traditional Hawaiian culture and values could play in treating a people, their families and ultimately, the entire community...

* * *

The Hawaii County Medical Society elected its new officers for a 2-year term: President Richard Lee-Ching; Vice President Lloyd Minaai; Treasurer Rodney Matsubara; and Secretary Chris Linden...

Ernest Bade, Hilo physician, was one of 23 persons nominated for the Big Island Mayor's 1990 Awards of Excellence...

Edward Shen, Straub cardiologist was named the 1990 recipient of the Guy Champion and John Milnor Professional Activities Award...

* * *

Our modest cardiac surgeon, Richard Mamiya, was awarded the American Red Cross, Hawaii Chapter's Humanitarian of the Year Award. Dick was honored at a Hilton Hawaiian Village fund-raiser for the Red Cross on March

*(Continued)* ➤


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## NEWS AND NOTES

*(Continued from page 259)*

20. When the reporter tried to interview Dick, he declined to say much except, "I'm not somebody who likes to toot his own horn, so interviews come hard for me." Dick was being honored for his achievements in cardiac surgery and his charitable contributions to St Louis High School, Punahou School, U of Hawaii, the Blood Bank of Hawaii, Palama Settlement, Academy of Arts, Bishop Museum, Japanese Cultural Center and the Aloha United Way. Besides being clinical professor of surgery, he serves as director of First Hawaiian Bank and chairman of the UH Athletic Advisory Board ... As a UH quarterback in the 1940s, Dick set a record for most passing yardage in a game (which stood until 1984 when Rafael Cherry broke it) ...

Hilo pediatrician Ruth Oda led the 7th Annual Girl Scouts Parade through downtown Hilo on March 16 ... Jorge Camara of Camara Eye Clinic in Honolulu was named to the board of directors, American Savings Bank...

The Hawaii Affiliate of the American Heart Association will fund 13 research projects through awards and grants totaling $281,548. Ten of these projects are being conducted in the state including Bert Lum's project, "Blood Cell Deformability and Endotoxin Shock"; Robert Kistner's "Early Identification of the Asymptomatic Abdominal Aortic Aneurysm"; J. Judson McNamara's "Reperfusion Induced Oxygen Radicals in Primates"...

### Conversations with Woody (Mid Pac Golf Marshall)

A weary golfer came home looking dejected... "How was your game today, dear?" asked his wife. "I had a miserable day ... Couldn't putt, couldn't drive ... couldn't do anything right ... I hit only two good balls all day..." "Which hole was that, dear?" consoled his wife. "In the 4th hole sand trap, I stepped on the rake..." the golfer grimaced...

* * *

A brand new Chrysler limousine cruising cross country stopped at a one-pump gas station in midwest farming country. The young attendant filling gas carefully studied the car with all its fancy gadgets. As the sportsman owner reached into his pocket for small change to pay the bill, there were two golf tees among the coins ... "What are those 2 white things?" the young man asked. "Oh, they are tees ... You place your balls on them when driving..." said the sportsman. "Gosh! I should have known this car has just about everything!"

### Hors de Combat

*Alcohol Alert:* The AMA warns that CISCO, a popular new alcoholic beverage packaged to look like a mild wine cooler is "an incredibly potent, potentially lethal alcoholic beverage." CISCO is carbonated, comes in 5 fruit flavors and contains 20% alcohol. A 12 ounce bottle is equivalent to 5 shots of vodka and young people who try CISCO are ending up in hospital ERs with acute alcohol poisoning...

*Malpractice Settle Rescinded: Hilo Tribune,* April 2: "Lawsuit: Doctor, Hospital to Pay $700,000" — "A 6-year malpractice suit was settled out of court when Hilo Hospital and Hilo physician John Uohara settled for $700,000. Hilo

Hospital was to pay a $275,000 share of the settlement while John was to be assessed the balance. Donna Smith of Keaau had claimed that John and the hospital were negligent during the delivery of her son Ryan who suffered asphyxia with severe and permanent injuries. Donna was to receive $92,000 and her son guaranteed at least $1.2 million. Attorney David Schutter was to get $348,000 in fees. The Hawaii Legislature would have to approve $75,000 for the hospital's share not covered by insurance...

*Hilo Tribune*, April 3: "Hilo Malpractice Settlement is Now Off" — Honolulu attorney Jeffrey Griswold states that the $700,000 settlement claim was off — that the terms of the secret settlement agreement was breached. A new motion will be filed to set the case for trial. "Uohara believes he is not liable in the case and our position is that there is no settlement." [Ed — Hurray! for John Uohara...]

## HMSA Capers

HMSA last year began limiting coverage for treatment of alcohol and substance abuse and now has tightened coverage for treatment of mental disorders generally for its federally employed and individual subscribers (or 11% of its subscribers).

HMSA has ingeniously retained American Biodyne to provide utilization reviews for mental health treatment. The review of therapists' requests for treatment is done by psychologists which rankles the psychiatrists...

Psychiatrist Stephen Kemble says, "There's widespread outrage among psychiatrists, psychologists and even patients about what HMSA is doing. Their central complaint is that Biodyne is harassing them and challenging their medical judgment." For individual and federal subscribers, there is a $750 limit for mental health therapy billings which covers about 5 visits. For further therapy, a request must be made to Biodyne where the harassment starts. The Hawaii Psychiatric Medical Association is currently pushing for state legislation to regulate managed care and prevent such abuse...

## Happy Outcome

We all knew what a bang-up job John Lewin was doing as the Hawaii Health Director. As proof, more than 130 people testified for Jack and only a handful (8 or 10) testified against his reappointment before a legislative hearing. The criticism was that Jack had commented a year earlier that the Health Department lacked the staff and equipment to adequately monitor geothermal development, though he has "always felt that geothermal was a sound energy form." [Ed — It is so difficult to tread on a thin line. Quote by Sir William Oslen: "Look wise, say nothing and grunt — speech was given to conceal thought."]

## Miscellany

*Golfing Friends:* Tom, Chris, Fred and Al had been golfing together for many years. On the short par 3 11th hole, Tom hooked his shot into the woods and went in search of his deviant ball while the others waited for him on the green. Soon they were bragging about their sons as all fathers do. Chris: "My son is an auto salesman, and he is doing so well, he recently gave his friend a brand new Jaguar..." Fred, not to be out-

*(Continued)* ➤

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BANKING AT THE SPEED OF SOUND

"Hello, Tom. Did you get a copy of my travel plans, yet? And is everything arranged?"

"Great! What about the other 'what ifs'?"

"Sure do. Looks like I'm covered. I'll be by tomorrow to finalize my investment decisions."




## NEWS AND NOTES

*(Continued from page 261)*

done: "My son is in real estate ... Sales have been so good, he reeently gave his friend a brand new eondominium..." Al: "That's nothing. My son sells boats and does such a booming business that he gave his friend a new boat..." Just then, Tom eaught up with his friends. "What are you guys talking about?" So they told him. "Well, my son is gay, but he is so well-liked that reeently his friends gave him a Jaguar, a eondominium and a new Chriseraft..."

(As told by our golfer friend, Andrew Uramoto)

### Oncology Dialogue

A 75-year-old Caueasian woman with a 50-pack-year history and severe COPD had continued to smoke. PMH: S/P eysteetomy for bladder eaneer; S/P LLL reseetion for adenoma; S/P pseudo tumor Lt eyelid... Since 1988, she has had progressive enlargement of an RLL paraspinal tumor, the nature of whieh eontinued to elude diagnosis...

Pulmonologist Al Furuike had seoped her in 1990 and had done a transbronehial biopsy of the tumor. Pathologist Larry McCarthy studied the biopsy speeimen and was unable to rule out small eell Ca. A more reeent transbronehial biopsy was more eellular and the question of lymphoma arose...

Pathologist Eugene Yanagihara frustrated by the inadequate speeimens was pushing for an open biopsy... Oneology surgeon Seott Hundahl queried: "What do you think is the extent of the eancer?" In view of her multiple tumor history, someone sniekered, "Whieh one?" Radiotherapist Vinee Brown projected, "The lowest morbidity and mortality would be a repeat bronehoseopy with transbronehial biopsy... Al, what is the ineidenee of pneumothorax from transbronehial biopsy?" Al: "Less than 5%. She is a real high risk for thoraeotomy. She even bleeds with bronehoseopy..."

Moderator Ken Sumida: "The real issue is the status of her lung." Vinee: "If left alone, she may even get better." Seott: "Open biopsy for the lady will be fatal." Eugene insisted, "We need an open biopsy for diagnosis." Scott: "The probabilities are all for low-grade lymphoma and therapy is a judgment eall. Treatment will be direeted by her symptoms..."

Ken Sumida summarized, "Then your reeommendation will be to observe her. If progressive eompression, then foeal radiation. If still no improvement, then ehemo..." Seott: "Therapeutieally, we are up against a wall. But first, do no harm. You don't want to kill her with a diagnostie proeedure..." Al added, "She finally stopped smoking..."

* * *

An S/P gastreetomy 73-year-old Oriental man had recurrent gastrie Ca after about 25 years. Moderator Glenn Kokame queried pathologist emeritus Grant Stemmerman about prophylactie measures: "Stemmy, how about anti-oxidants sueh as Vitamin C and E?" "I don't know. There are no conelusive studies available..." Glenn: "Linus Pauling reeommends high Vitamin C doses." Stemmy parried: "Well, fresh veggies of all kinds may show some beneficial effeets..." Glenn: "How about retinoids?" Stemmy remained noneommittal: "Our studies haven't shown any indieations..."

* * *

A 57-year-old man with a 25-year history of

recurrent gastric ulcers had a 1-month history of epigastric discomfort that was being treated with an H2 blocker. He had bloody diarrhea for 1 day followed by 2 days of melena. He had quit his 2-pack-per-day smoking 25 years ago, but he continued to consume a 6-pack and 5 cups of coffee a day... At surgery, there was a large fungating greater curvature lesion with omental spread. He had a subtotal gastrectomy with omentectomy. Stemmy: "That's incredible. With a history of gastric ulcers for 25 years, not to have a EGD..." Pathologist Larry McCarthy showed slide after slide of intestinal type Ca of the stomach. "Any comments, Stemmy?" Stemmy: "I just see a big cancer that should have been taken out 10 years ago..."

Glenn turned to oncologist Ken Sumida for comments on EAP. Ken: "In a neoadjuvant setting with unresectable gastric Ca, the EAP regimen will have a 60 to 70% response. At second-look surgery, 30% showed no evidence of tumor. For adjuvant setting, there are no studies available..." Stemmy: "Instead of teaching med students the signs and symptoms of advanced gastric cancer, we should encourage diagnosis at Stage I ... eg PGI (Pepsinogen Gp I) vs GP II ... and the role of Helicobacterium Pylorii ... ie 90% positive antibodies in gastic Ca vs 25% positive in controls even in asymptomatic patients. In gastric ulcers, the risk of cancer is 5 times greater. The patient should have had EGD when he was more salvageable..." Glenn added, "Ulcer of the greater curvature — 50% malignancy ... Ulcer of the lesser curvature — 10% malignancy ... The old dictum was if a gastric ulcer doesn't heal in 3 weeks, operate. Incidentally, Hawaii leads the nation in EGD's." Stemmy: "But Japan is still ahead of Hawaii..."

## Miscellany

A man goes into a restaurant and notices the waiters all carrying a spoon in their vest pockets. Curious, he asked the waiter. The waiter explained, "We had an efficiency expert in, and he noticed that every night at least one customer drops his spoon. So he suggested that we each carry a spare spoon so we don't have to run back to the kitchen for a fresh one..." The man was impressed. "What else did the efficiency expert suggest?" "See this string sticking out of my zipper? The expert noticed that we spent too much time washing our hands after pissing. He suggested we tie a string around our penis so we can pull it out without soiling our hands..." Man wondered: "How do you get your penis back in?" Waiter: "Well, I don't know about the others, but I use the spoon..."

(As told by our favorite Dista rep, John Howitt)




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# Maka O Ka Kauka

Russell T. Stodd, MD

**How blind must he be that cannot see through a sieve. Jurisprudence is the art of running the circus from the monkey cage.**

As if peer review were not enough trouble, now the Supreme Court of the United States has further insulted the process. An ophthalmologist in Los Angeles filed a complaint in federal court alleging that the hospital and staff tried to force the surgeon out of practice by denying him hospital privileges after a peer review hearing. In a seemingly obvious decision, a federal judge dismissed the lawsuit, ruling that the allegations had too little connection to interstate commerce to come under federal antitrust law. However, the appeals court reinstated the lawsuit, finding that *ALL* peer review activities affect interstate commerce, and the Supreme Court in a 5-4 decision affirmed the appeals court. In a dissenting opinion, Justice Scalia said the Court is turning routine business cases into antitrust disputes and contributing to the trivialization of the federal courts. Amen, Judge Scalia, but judges and lawyers write the rules, certify the players, decide who wins and who loses — and then our suffocating legal system forces the public to pay all the bills. Meanwhile we must endure the arrogant flatulence of lawyer Ralph Nader and the misdirection of columnist Dear Abby, telling us that doctors must clean up their profession.

**She would not budge an inch.**

Gail Wilensky — who as a HCFA consultant was involved in developing the Medicare contract demos — is not surrendering. But now key lawmakers are getting irritated with HCFA's assumption of power beyond the intentions of Congress. Reps Pete (you can call me "Fortney") Stark, chairman of the House of Ways and Means Health Subcommittee, and Bill Gradison (R-Ohio), the panel's ranking GOP member, are questioning HCFA's authority to conduct Medicare payment experiments. In summary, the PPOs being contrived by Ms Wilensky are in

violation of HCFA's reimbursement policy, and Ms Wilensky wants a waiver of her own rules. Reps Stark and Gradison are saying HCFA cannot do that, and they want an amendment specifically barring the cataract PPO project.

**John Corboy, MD, quits Hawaii Ophthalmological Society!**

Sadly, Dr John Corboy, one of the original "old guard" in the HOS, has resigned from membership. This is a sad event because each of our members is very important in the abiding struggle to maintain professional skills and unity in promoting the cause of medicine and ophthalmology in the community. Not long ago, Dr Corboy was one of our most effective spokesmen at the legislature and with the media, as he helped to accurately define appropriate medical parameters for our legislators. He will be missed.

**Learn to live and live to learn. Ignorance like a fire doth burn.**

Probably the best response is to laugh. But really, it isn't funny. A bill has been presented in the Michigan legislature to allow optometrists to perform almost unrestricted medical practice. If passed, the bill would permit ODs to use instruments, devices and pharmaceutical agents to treat diseases of the eye and "related structures." They could diagnose or treat any abnormal conditions of the anterior segment of the human eye and related structures that *do not require incision with closure*. Additionally, they would be defined as "optometric physicians." Why not just propose that we forget about this silly challenging educational exercise called medical school and open the door to all health pretenders? Then we can return to the unrestricted chaos of caveat emptor "medicine" of America in 1890. Faith healers, phrenologists, chiropodists, bone-crackers and all assorted storefront mountebanks would be welcome. Yo Momma!

**The great end of life is not knowledge, but action!**

In Britain, the Royal College of Surgeons of England believes that patients who consider themselves to be at risk for HIV infection should be encouraged to undergo voluntary testing. In addition, the RCS states that in cases where a surgeon or other member of an OR

*(Continued)* ➤


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## MAKA O KA KAUKA

*(Continued from page 265)*

team is injured during the treatment of a high-risk patient, current policy allows the surgeon to test the patient's blood even if he hasn't previously consented to such testing.

**They cover a dunghill with a piece of tapestry.**

It is not easy to kill a lie, especially one that sounds so appealing. In New Jersey, a bill is pending in the legislature that would require physicians to obtain a certificate of need (CON) before purchasing diagnostic equipment costing more than $1 million. The bill's supporters have the mistaken belief that limiting medical technology will help restrain escalating health care costs. Such a law has been in place in Hawaii (more restrictive than New Jersey), since Congress logically ceased funding the comprehensive health planning law several years ago. The CON process does not restrain expenditures. It increases them. The HMA and the AMA have repeatedly tried to inform legislatures that such laws obstruct necessary changes, cause expensive delays, force significant and unnecessary capital outlays, require reams of dull detailed documents, and place decisions in the hands of individuals, councils and committees that have limited knowledge and understanding. But of course, the underlying reason we have such an agency in our little island state is that it affords patronage, jobs and busywork for appointees. So, despite the obvious, so-called *comprehensive health planning* lives on, and as Parkinson's law states so eloquently, it will live on and the agency will grow, even when health care has disappeared completely.

**Addenda —**

— Five percent of diabetics get glaucoma, compared to 1.5% or the normal population.

— In Chico, California, the City Council enacted a ban on nuclear weapons, setting a $500 fine for anyone detonating one within the city limits.

— A good politician is quite as unthinkable as an honest burglar.

— One way to get high blood pressure is to go mountain climbing over mole hills.

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rts



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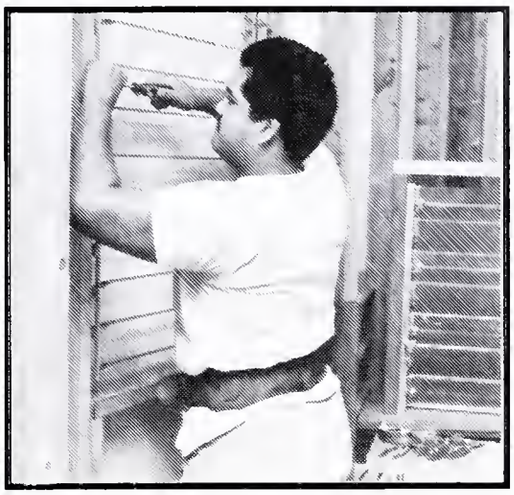
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# Taxation without representation

The U.S. Congress makes laws, but the bureaucracy of government regulates by fiat.

After months and years of discussion and negotiation, our government came up with the RBRVS, a revision of the relative value system of payments to physicians based not only on procedures but incorporating cognitive services that are very much a part of the art of ameliorating patients' concerns over their illnesses, injuries and crippling degenerative conditions.

This same government of lay and supposedly wise men and women, realized that things medical needed the expertise that only physicians can supply. Therefore, the Congress, with the approval of the Administrative Branch — HCFA (Health Care Financing Administration) — mandated that Harvard University and its medical faculty, under the direction of Professor Hsiao, in conjunction with organized medicine exemplified by the AMA, come up with the Harvard RBRVS.

This took a great deal of effort and the expenditure of much energy on the part of our profession in attempting to bring together as fair a system of remuneration as was possible, considerating the large disparity between what a cardiovascular surgeon or a neurosurgeon charges the patient as compared with what a rural GP or an internist charges.

The AMA accepted it.

The Congress enacted the law embodying these agreements.

The reader is surely aware by now that the input from the governmental side was, and will be, in the direction of reducing the costs of medical care as illustrated by the current level of 12% of the nation's Gross National Product (GNP). The Market Place, ie big and small business, employers and labor unions, the powerful insurance industry are all on the same side as government: The costs of medical care *must* be reduced (this fiat is larded over with the platitude: "But the quality of medical care must be maintained. The two are incompatible.")

Our profession is dedicated to the principle (a) that quality of care is uppermost, (b) that the cost to the patient needs to be reasonable and commensurate with the anticipated benefit and (c) that access to basic, primary care by all people, rich or poor, should have no obstacles put before it.

HCFA has proposed a principle of "budget neutrality" which is an euphemism for implementing a system of payments that, in its national totality, would maintain a medical care budget in this country no higher — and no lower — than what it is now for the care of those covered by Medicare and Medicaid (this, of course, would filter down to all private and insured systems).

Now comes the "fiat" from the Administration. The platitude of "input from the people" has been given a deadline of 4 August 1991. We all know that "public hearings" — known in Hawaii as Shibai — are, at all levels of government, akin to Marie Antoinette contemptuously telling the people of France, before she was ultimately beheaded by the enraged populace, "If they don't want to accept the proffered bread, let them eat cake."

Breaking its promise on budget neutrality, the Administration has proposed regulations, recorded in the Federal Register of 5 June, that mandate an across-the-board 16% reduction in the CF — the conversion factor that translates relative values for medical services into dollar amounts.

We are resigned, more or less, to the fact that the increase in remuneration at the low end of the scale, the cognitive services dispensed by family physicians, internists, pediatricians et al, will not be as dramatic as the RBRVS first projected.

At the high end of the scale, the surgeons et al are already severely to be restricted in what they may charge their Medicare and Medicaid patients.

To put on top of this a 16% across-the-board reduction in payments is, as we headlined above: Taxation without representation.

The stated regulations are very complex. We had difficulty understanding the presentation made by our leaders at the HMA Council meeting of 5 July — to be repeated many times at County Medical Society meetings and at hospital staff meetings; to be promulgated by mail to all physicians in Hawaii, whether they are members of HMA or not.

In essence, the 16% cut in the dollar value of the CF includes a 3% cut that the Administration assumes will make up for the increase in the number of visits or procedures that it cynically projects all physicians will do (to make up for their loss in revenue). Government has given this a moniker: "Behavioral offset." AMA and the HMA are certain that there is no evidence for this projection; it did not occur during the wage-price freeze in the 1970s.

The 16% cut also includes 6% — 2% each year through 1994 — because: "For every 1% adjustment [in physician payment to maintain budget neutrality], the CF must be reduced by 3% because in 1992 the CF represents only a third of the total Medicare payment." Can the reader figure that one out, we ask?

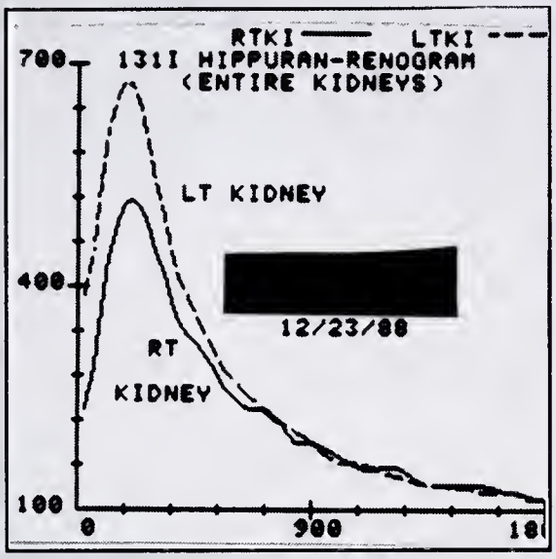
The "transitional formula" mentioned in the FedReg is another cut, an incomprehensible justification for governmen-

*(Continued on page 277)* ➤

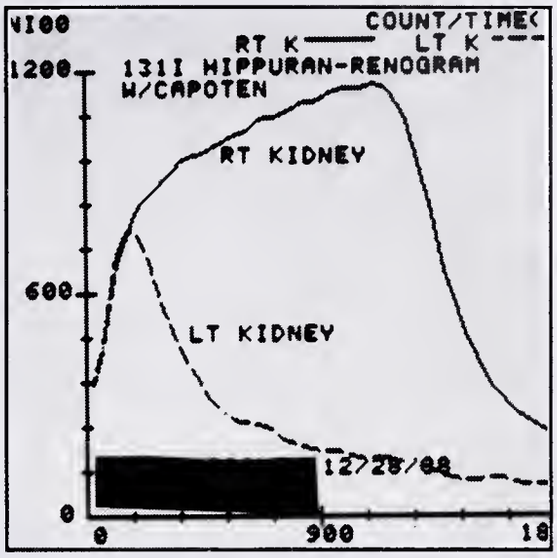
# Nuclear Medicine Teaching File

## CAPTOPRIL RENOGRAM IN RENOVASCULAR HYPERTENSION

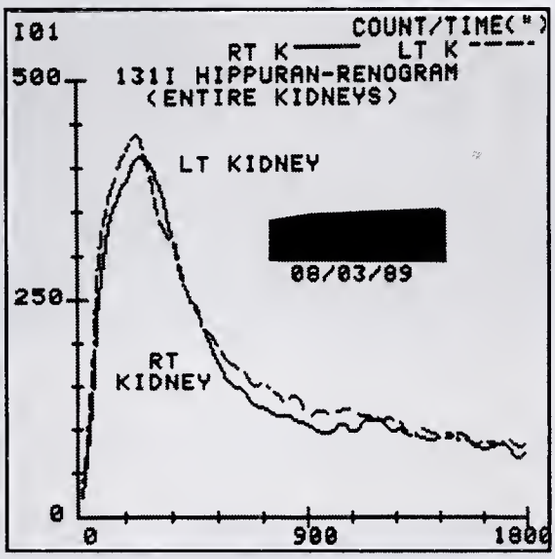
**Clinical History: 43 year old female with headache, accelerating hypertension, and mild azotemia.**



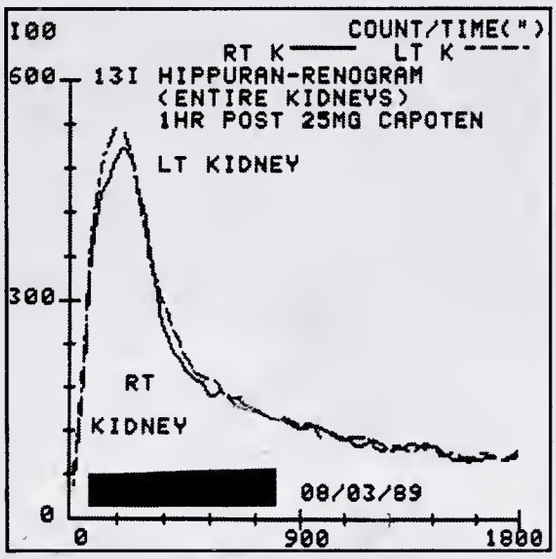

1. Baseline renogram without captopril shows slightly reduced function and mild delay in urinary clearance on the right.




2. Captopril renogram prior to angioplasty. Note exaggerated delay in urinary clearance induced by captopril on the right, consistent with renovascular hypertension. Arteriography showed severe fibromuscular dysplasia.




3. Renogram without captopril following angioplasty of the right renal artery. Note symmetrical kidney function.




4. Captopril renogram after angioplasty shows no further evidence for renovascular hypertension.


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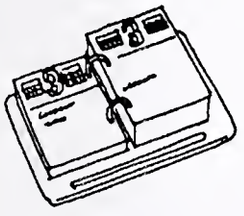
We close this lengthy editorial by paraphrasing a famous saying: Now is the time for all good doctors to come to the aid of their noble profession and to join in a mighty howl of betrayal by our government!

It should be obvious to everyone — and each of us needs to emphasize this — that the net result would be a major obstacle to "access to medical care"; it will be our patients who will suffer the most.

The physician has seen his costs of doing business rise to heights that make it not feasible for him to see patients, and this on top of the debt of $100,000 that accompanies his graduation from school and training nowadays, which he must pay off. His share of Medicare and Medicaid patients, for services to whom the government is often paying the physician less than it costs him in overhead, is increasing as these segments of our population are increasing in numbers. The physician is being forced to consider an 8-to-4 job on salary instead of being available 24 hours a day, or to give up the practice of medicine as a dedication to caring for people.

J. I. Frederick Reppun MD
Editor

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## Continuing Medical Education

The Hawaii Medical Association does not review or evaluate the programs listed in the HAWAII MEDICAL JOURNAL Continuing Medical Education column and assumes no responsibility for educational value, scientific content, changes in agenda or cancellations.

### LOCAL ACCREDITED PROGRAMS
### ONGOING

For a complete list of ongoing programs, please refer to the March 1991 edition of the HAWAII MEDICAL JOURNAL. Further information is available through the individual institutions or through the HMA's CME Department.

### SPECIAL EVENTS

All special events should be confirmed with the CME program sponsors, as cancellations are not necessarily reported to the HAWAII MEDICAL JOURNAL.

**AUGUST**

8/3-8/10
**Ophthalmology for the Practicing Physician.** Contact: B. Johnson, 213-342-2555, University of Southern California School of Medicine, 1975 Zonal Avenue, KAM 307, Los Angeles, CA 90033-9987. Location: Kamuela, Big Island of Hawaii.

8/11-8/21
**34th Annual Postgraduate Refresher Course.** Contact: B. Johnson, 213-342-2555, University of Southern California School of Medicine, 1975 Zonal Avenue, KAM 307, Los Angeles, CA 90033-9987. Location: Maui and Big Island of Hawaii.

8/13-8/17
**Chronic Fatigue Syndrome: The Syndrome in Search of A Diagnosis.** Contact: Southern California Neuropsychiatric Institute, 6794 La Jolla Blvd., La Jolla, CA 92037, 619-454-2102. Location: Mauna Kea Beach Hotel, Big Island of Hawaii.

8/16-8/20
**Hot Spots in Dermatology.** Sponsored by The Hawaii Dermatology Society and The Kauai Foundation for Continuing Education. Contact: David Elpern MD, PO Box 457, Kalaheo, Hawaii 96741, 808-332-7292. Location: Molokai.

8/23-8/25
**First Annual Kaiser Permanente Emergency Medicine Conference: Advances in Emergency Medicine.** Co-sponsored by the Hawaii Medical Association. Contact: Nathan Fujimoto MD, Kaiser Foundation Hospital-Hawaii, 3288 Moanalua Road, Honolulu, HI 96819, 808-834-9496. Location: Grand Hyatt Wailea, Maui.

8/23-8/26
****Health Matters: Social Economic and Philosophical Aspects of Health Care.** Contact: Pacific Health Research Institute, 846 S. Hotel Street, Suite 303, Honolulu, HI 96813, 524-4411. Location: Waiohai Hotel, Kauai.

**OCTOBER**

10/11-10/13
**Hawaii Medical Association 135th Scientific Annual Meeting.** Sponsored by the Hawaii Medical Association. Contact: Jennie Asato, Hawaii Medical Association, 1360 South Beretania Street, Honolulu, Hawaii 96814, 808-536-7702. Location: Westin Kauai.

**1992**

**JANUARY**

1/20-1/24
**10th Annual Hawaii Conference on Gastrointestinal and Hepatic Diseases.** Co-sponsored by Hawaii Medical Association; Queens Medical Center Cancer Institute. Contact: Gary Glober MD, Box 78; 1515 Holcombe, Houston, TX 77030, 713-792-2828. Location: Hyatt Waikoloa, Big Island of Hawaii.

**MARCH**

3/1-3/6
**Hawaii 1992: 7th Annual Primary Care Medicine.** Co-sponsored by Hawaii Medical Association. Contact: Valerie Murray, Pacific Institute of Continuing Medical Education, PO Box 1059, Koloa, HI 96756, 808-742-7471. Location: Stouffer Waiohai Beach Resort, Kauai.

3/8-3/13
**Kauai 1992: A Week of Sports Medicine.** Co-sponsored by Hawaii Medical Association. Contact Valerie Murray, Pacific Institute of Continuing Medical Education, PO Box 1059, Koloa, HI 96756, 808-742-7471. Location: Stouffer Waiohai Beach Resort, Kauai.

*All starred conferences are sponsored and/or co-sponsored by the John A. Burns School of Medicine. The John A. Burns School of Medicine, University of Hawaii at Manoa, is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. For registration information, please contact the sponsoring organization.

# Highlights of the Special Meeting of the HMA Council July 5, 1991

Present: Drs. J. McDonnell, S. Wallach, J. Chang, A. Don, J. Kim, A. Kunimoto, C. Kam, F. Holschuh, C. Wong, L. Sakai, R. Laird, R. Lee-Ching, H.H. Chun, J. Spangler, H.K.W. Chinn, H. Fong, M. Shirasu, W. Young, E. Bade, R. Goodale, D. Fu, T. Smith, G. Goto, J. Lumeng, G. Mills, W. Chang, W. Dang, N. Winn, and N. Kaneshiro. Also present were Drs. F. Reppun, Editor-HMJ, B. Fong, Medical Director-Aetna, J. Lewin, Director-DoH, E. Anderson, DoH, and representatives from Chiefs of Staff Hawaii Hospitals, specialty Societies and the Federation of Physicians and Dentists, Drs. L. Levin, P. Hellreich, J. Matsunaga, R. Suzuka, M. Kaneshiro, W. Lau, K. Ing, A. Hawk, C. Chang, C. Lehman, R. Cloward, J. Drouilhet, M. Mitsunaga, R. Lipman, D. Ueunten, J. Houk, S. Loo, and D. Sheetz. HMA staff present were: J. Won, B. Kendro, N Jones, J. Asato, L. Tong, P. Kawamoto, and M. Lindsey - recording secretary.

The purpose of the special meeting of the HMA Council, called by the President and the Executive Committee, was to acquaint the leaders of the membership of HMA with the regulations promulgated by HCFA as stated in the Federal Register of June 5, 1991.

These proposed regulations mandate an across-the-board cut of 16% in payments to providers of services to Medicare patients. This is contrary to the agreement reached between the Congress, the Administration and organized medicine, in which the dollar value of the conversion factor for the Resource-Based Relative Value System (RBRVS) would adhere to an agreed-upon level of being "budget neutral."

Although there were many other points of concern, the meeting focused on the cut in the conversion factor only, and its impact on all physicians.

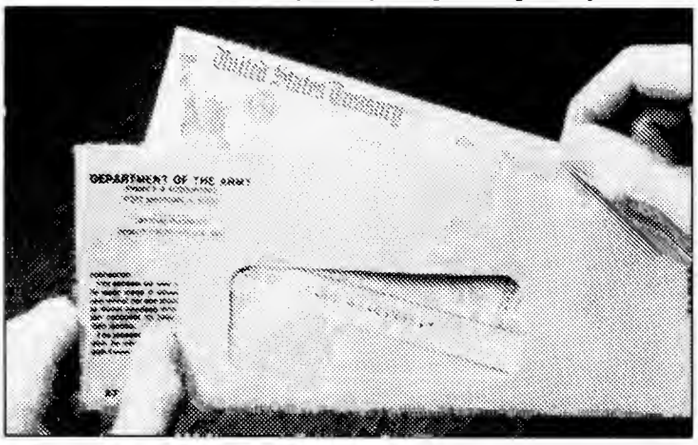
HMA President John T. McDonnell called upon each and every physician either to write to, or to call the Hawaii members of Congress, Louis Sullivan MD, Secretary of the Department of Health and Human Services (DHHS) and Dr Gail Wilensky, Director of the Health Care Financing Agency (HCFA) and urge them to have this cut reversed in order to adhere to the principle of budget neutrality, meaning no increase in the costs of health care in the U.S.

Enough information was presented to those attending to allow them to spread the word. The concern of physicians over this drastic regulation clearly called for urgency and immediate action. The deadline for submission of comment to HCFA is 4 August 1991.

Andrew Don MD
Secretary


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# RBRVS: Still good news for physicians

Joseph F. Boyle MD

*Lately, many physicians have been saying they've become disillusioned with the RBRVS. They don't believe the physician payment reform will bring gains for their undervalued evaluation and management services. They don't trust the federal government to live up to its end of the bargain. However, no one should write off the RBRVS. As can be seen from the text below, RBRVS will protect undervalued evaluation and management services in an era of medicare budget-cutting; it* will *introduce fairness and rationality into the Medicare payment system; it* will *provide a basis for arguing against unfair cuts in reimbursement (such as the recent ban on payment for most EKG interpretations) and it* will *bring the profession together to fight against any further cuts in the Medicare program.*

When the Resource-Based Relative Value Scale first came onto the health policy scene, physicians supported it because it would introduce fairness and rationality into the Medicare payment system, unite the medical profession, and, most of all, because it would be good for patients. But lately, I've been hearing many of my colleagues say they've become disillusioned with the RBRVS's implementation — they don't trust the federal government to live up to its end of the bargain.

Well, I don't trust the federal government to live up to its bargain, either — at least not without concentrated pressure on it to do so. However, I don't think the medical profession should write off the RBRVS. Despite many problems — some immediate and some potential — it still will do what it was intended to do.

For instance, under the RBRVS, relative values are expected to increase substantially for most evaluation and management (E/M) services. Skeptics have suggested that the RBRVS will be used only to cut surgical values — and fees. New estimates show, however, that the RBRVS will increase relative values for E/M services by 30% on average, and that, as a result, Medicare payments for these services will increase substantially above 1991 payments under a "budget neutral" RBRVS fee schedule.

Better yet, the RBRVS protects undervalued evaluation and management services provided by all physicians *even when the budget is cut.* Consider what would happen to a $30 office visit from 1991 to 1996 in a purely hypothetical scenario in which fees normally would have been given a 15% inflation increase, but Congress cuts payments 10% below inflation. In 1996, that same office visit fee would total $31.05 without the RBRVS. With the protected 30% gain for E/M services expected under the RBRVS, it would total $40.36. Especially in this budget-cutting climate, the RBRVS will protect fees for the E/M services *all* physicians provide.

Exactly what effect there will be on an individual's practice depends on several factors, however. Because of elimination of geographic differentials and limits on balance billing, for some there will be no actual gain (or even a reduction) for E/M services. Where physicians practice, how often they accept assignment, how much they charge in excess of Medicare's "approved amount" for unassigned claims, and their mix of services, will determine the effect on their practices. *But regardless of each individual's gain or loss, the RBRVS will enhance payments overall for physicians' E/M services compared with what would have been.*

Another benefit is that the RBRVS allows physicians to unite for a fair conversion factor and to oppose further cuts in the Medicare program, rather than engaging in internal squabbling. The conversion factor that makes the RBRVS into a real fee schedule applies to *all* physician services. That means the entire profession has a stake in making sure it's fair and an incentive to work *together* to stave off future Medicare cuts. In fact, every medical group that testified before the Physician Payment Review Commission (PPRC) last December, including the American Medical Association, the American Society of Internal Medicine, the American Academy of Family Physicians and the American College of Surgeons, opposed HCFA's proposal to lower the conversion factor. HCFA has indicated it will assume volume will increase and that it will set the conversion factor lower to make up for that assumed increase.

The RBRVS also provides a basis for opposing unfair cuts in specific procedures. For example, the profession can argue that the ban on reimbursement for most EKG interpretation is contrary to the RBRVS, because the study said the service indeed has a value. The influential PPRC agrees, giving the profession a real opportunity to get this cut reversed. Without the RBRVS, it would have been far more difficult to make that case.

Continued support for the RBRVS allows the profession to be *for* — not just against — something. If it wasn't for the medical profession's support for the RBRVS, we'd all be

*(Continued on page 287)* ➤

This article was submitted to the *Journal* by Dr Boyle, president of ASIM, through John H. Houk MD, President of the Hawaii Society of Internal Medicine.

# The Friends of the Medical School

Dorothy Lum*

*The Friends of the John A. Burns School of Medicine, as an organization, is an extension of a basic need. Mary Cutting has compiled a history of the organization in which she was an instrumental force. Some of the highlights are included below.*

When Dr Windsor Cutting needed medical books for the first medical school classes, he looked to local bookstores and found them unwilling to carry a selection sufficient for student needs. He volunteered his wife Mary to solve the problem. She met the challenge and in 1969 established what would become the Medical School Shop, under the auspices of the Leahi Hospital Auxiliary, which served the Diamond Head facility where the 2-year medical school program was housed.

Mary quickly recruited other volunteers to work in the shop, order books and pay bills. These volunteers included Phyllis Hathaway, who became the full-time volunteer manager in 1976. Phyllis continued in that role until the spring of 1990 when, following her physician husband's death, she resigned.

"The Friends" was born in 1976, when the school became a 4-year program and moved into the current location on the Manoa campus. Shop operations continued at the new site. Income from book sales was supplemented by gifts to the school. A financial aid program was started; an Emergency Loan fund was established; funds were appropriated as seed-money for the television program "Body Talk." Funds were provided to students and faculty who needed resources to conduct seminars, and books were donated to allied library services.

Many of these programs have continued along with the underwriting of expenses for the annual Convocation and for help to the first year students' Parents' night.

Recently, funds were used to pay patient "simulators" used during the first year of learning under the new Problem-Based Learning Program. In addition, 2 big-budget items were purchased: A video disk system for the Health Instructional Resources Unit and several Medline search computer systems, 2 of which are housed at the Hawaii Medical Library and available to the medical community.

All of this has been made possible through the combined help of Mary Cutting, Joy Ashton, Phyllis Hathaway and a corps of 40 faculty wives. The parents of the medical students and their friends, retired physicians and the medical students themselves, before and after graduating, have given it generous support during the 21 years the Medical School Shop has been in operation under The Friends. We thank each and every volunteer whose legacy extends beyond the service provided students, faculty and the community.

Now, the University Bookstore has taken over the operation of the Shop and the Board of Directors of the Friends of the Medical School is planning to husband carefully the monies received from the "buy-out," so that the school's request for funds for projects can be met for many years to come.

The Board is also moving to expand its activities beyond the campus and is working with individuals and groups in the community to put on the first of projected annual fitness fairs aimed at 5- to 12-year-olds.

On September 15, 1991, medical students and faculty will join with The Friends to show youngsters the proper way to exercise for their age range. Entertainment, food and sales will round out the activities to be held at Thomas Square. We are calling on willing hands to make this not only a success in terms of what the youths gain, but also in the hopes that this event will spread the word about the good work the school does in the community.

Doctors and their families, parents of medical students and their friends are encouraged to become part of this project. Revenue gained will be placed in the Terence A. Rogers Student Support Fund, which was established in honor of former JABSOM Dean Rogers and has as its aim to recruit and retain students who are from ethnic groups underrepresented in medicine.

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# Alcohol and sleep apnea

Victoria S. Rains MD LTC MC USAR*
Thomas F. Ditzler PhD**
Richard D. Newsome PhD Maj BSC USAF**
Sonia Lee-Gushi RPSGT CRTT†
Edward J. Morgan MD PhD††

*Acute ingestion of ethanol induces vasodilation and swelling of respiratory mucosa; it depresses respiratory centers resulting in hypotonia of oropharyngeal dilator muscles and inducing or aggravating sleep apnea. However, no association between the sleep apnea syndrome (SAS) and Alcohol Use Disorders (AUD) has been demonstrated.*

## Introduction

Sixty eight patients diagnosed as having SAS by polysomnography over a 6-month period were evaluated for the presence of AUD using the Michigan Alcoholism Screening Test (MAST) and an alcohol consumption history questionnaire. The prevalence of AUD was obtained by including both the positive MASTs and/or with admitted hazardous consumption known to correlate with significant physiologic risk (5 or more standard drinks per day on a regular basis). The correlation between moderate and severe SAS known to be associated with increased risk for mortality (Apnea Index > 20), was then evaluated with respect to presence or absence of AUD.

The prevalence of AUD in the SAS patients as defined by MAST alone was 22% (15/68), a figure which correlates with the prevalence found in other studies of in- and outpatient cohorts. Twelve sleep apnea patients (18%) admitted that they consumed hazardous amounts of alcohol. The prevalence of AUD, using a positive MAST and/or admitted hazardous consumption, was 31% (21/68). Eighty six percent (18/21) of the patients with AUD were found to have an apnea index of 20 or greater, indicating a high mortality risk. AUD and high mortality risk sleep apnea were in significant correlation ($N = 68$, $r = 0.24$, $p < 0.05$).

Our study demonstrates a significant correlation between AUD and SAS, even in the absence of acute alcohol ingestion immediately prior to the polysomnographic test. In addition, the correlation between AUD and SAS severity suggests that the morbidity seen in both AUD and SAS may be related to the same pathophysiologic mechanism.

## Background

The effect of alcohol on sleep is well known. Acute alcohol ingestion disrupts the normal sleep pattern by reducing sleep latency and increasing wakefulness in the last half of the night[1]. Abnormal sleep patterns occur in alcoholics, even after prolonged sobriety, because of the effects of chronic alcohol toxicity on sleep centers[2,3].

The relationship between acute alcohol ingestion and sleep apnea has also been investigated. Taasan et al demonstrated that 2 ml/kg of alcohol consumed 1 hour prior to bedtime induced apneic episodes (cessation of breathing at the nose and mouth for 10 seconds or more[4]) in normal subjects[5]. Scrima and colleagues found similar results in both normal subjects, as well as in individuals diagnosed with the SAS after 3 oz of 80-proof alcohol[6]. Alcohol induces apnea through both central and peripheral mechanisms. Acute ingestion of ethanol induces vasodilation and swelling of respiratory mucosa and depresses respiratory centers, resulting in hypotonia of oropharyngeal dilator muscles and inducing or aggravating sleep apnea[7,8]. Peripherally, alcohol causes vasodilation resulting in pharyngeal edema[7].

There is also a possible link between chronic heavy alcohol ingestion and sleep apnea. Vitiello and colleagues demonstrated a high prevalence of nocturnal hypoxic episodes in a population of recovering alcoholics[8]. In addition, the severity of the alcohol abuse was found to correlate with the level of nocturnal hypoxia[9,10]. It was suggested that the mechanism was sleep

* University of Hawaii, John A. Burns School of Medicine
Division of Geriatric Medicine and
Tripler Army Medical Center Augmentation Unit, US Army Reserve
** Tri-Services Alcohol Recovery Facility
† Sleep Disorders Center, Kuakini Medical Center
†† University of Hawaii, John A. Burns School of Medicine
Department of Medicine and
Kuakini Medical Center, Pulmonary Services

Please address correspondence and request for reprints to:
Victoria S. Rains MD
Division of Geriatric Medicine
347 N Kuakini St, 9th Floor HPM
Honolulu, Hawaii 96817

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Article received December 19, 1991.

apnea, however these patients were not tested by polysomnography.

The relationship between chronic alcohol use and the SAS (5 or more apneic episodes per hour of sleep[4]) is important because both diseases result in significant morbidity. In fact, the sequelae of both diseases include hypertension, arrhythmias, depressive symptoms, cardiac disease, cerebrovascular accidents and, most importantly, death. He et al demonstrated that sleep apnea patients with an apnea index (AI) > 20 had significantly greater mortality than those with an AI < 20[11]. The correlation between SAS severity and the mortality in alcoholic SAS patients has not been studied.

Our study investigates 2 aspects: (1) What is the prevalence of AUD in patients diagnosed with SAS by polysomnography? and (2) is AUD related to the severity of SAS? The term "Alcohol Use Disorder" (AUD) was chosen to conform with the criteria for alcohol abuse and/or alcohol dependence found in the third edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM III-R)[12].

## Methods

Sixty eight patients presenting to the Kuakini Medical Center Sleep Laboratory for polysomnography over a 6-month period were diagnosed as having SAS. These patients were evaluated for a possible associated AUD, using the Michigan Alcoholism Screening Test (MAST). MAST is a weighted, 25-item questionnaire, which screens for the presence of alcoholism when 5 or more points are calculated on the basis of positive responses[13].

The results of MAST were then correlated with the alcohol consumption history obtained from the sleep laboratory questionnaire developed by Laughton Miles[14]. The alcohol consumption questions solicit information concerning the type of alcoholic beverage consumed and the pattern of use as measured by both quantity and time frame. Individuals with admitted consumption of 5 or more standard drinks on a regular basis (daily or on weekends) were considered to have a possible AUD because Sanchez-Craig and colleagues demonstrated that this pattern of "hazardous consumption" results in a significant morbid risk to individuals[15].

Finally, the relationship between the severity of AUD and of SAS was examined by comparing MAST results and the presence or absence of hazardous consumption of alcohol. The severity of SAS was defined by an apnea index of < 20 versus ≥ 20. An apnea index of 20 is thought to require treatment because of the increased risk of death as a consequence. Such patients are generally considered to be candidates for treatment with continuous positive airway pressure because it has been demonstrated that the incidence of mortality is reduced[11].

## Results

The average age of patients referred to the sleep laboratory was 48 years, with a range of 20 to 73 years. The prevalence of MAST positive sleep apnea patients was 22% (15/68). None of the 12 female patients were screened positive on MAST, whereas 15 of 56 males were MAST positive for a prevalence of 27%. Fourteen individuals evaluated by the sleep laboratory did not complete MAST; the participation rate was 85%, therefore.

**TABLE 1**

**Relationship between admitted hazardous consumption and MAST scores**

| | | POS. MAST | NEG. MAST | TOTAL |
|---|---|---|---|---|
| HAZARDOUS CONSUMPTION* (Number of Patients) | Present | 6 | 6 | 12 |
| | Absent | 9 | 47 | 56 |

* Hazardous consumption is the admitted consumption of 5 or more standard drinks on a regular (daily or on weekends) basis.

**TABLE 2**

**Relationship between alcohol use disorders and sleep apnea syndrome**

| | SEVERITY OF SAS | | | AGE |
|---|---|---|---|---|
| | Apnea Index <20 (No. of Pts.) | Apnea Index >20 (No. of Pts.) | Total No. | Mean (SD**) |
| AUD* Present | 3 | 18 | 21 | 46.8 (7.7) |
| AUD* Absent | 18 | 29 | 47 | 48.5 (12.8) |

* Patients with Alcohol Use Disorders (AUD) are MAST positive and/or admit to Hazardous Consumption.
**Standard Deviation

Twelve sleep apnea patients (18%) admitted to regular hazardous consumption of alcohol. Six of the 15 MAST-positive patients did not complete the alcohol consumption questionnaire. The correlation between MAST scores and reports of hazardous consumption was significant ($N = 68$, $r = .27$, $p < 0.05$), as shown in Table 1.

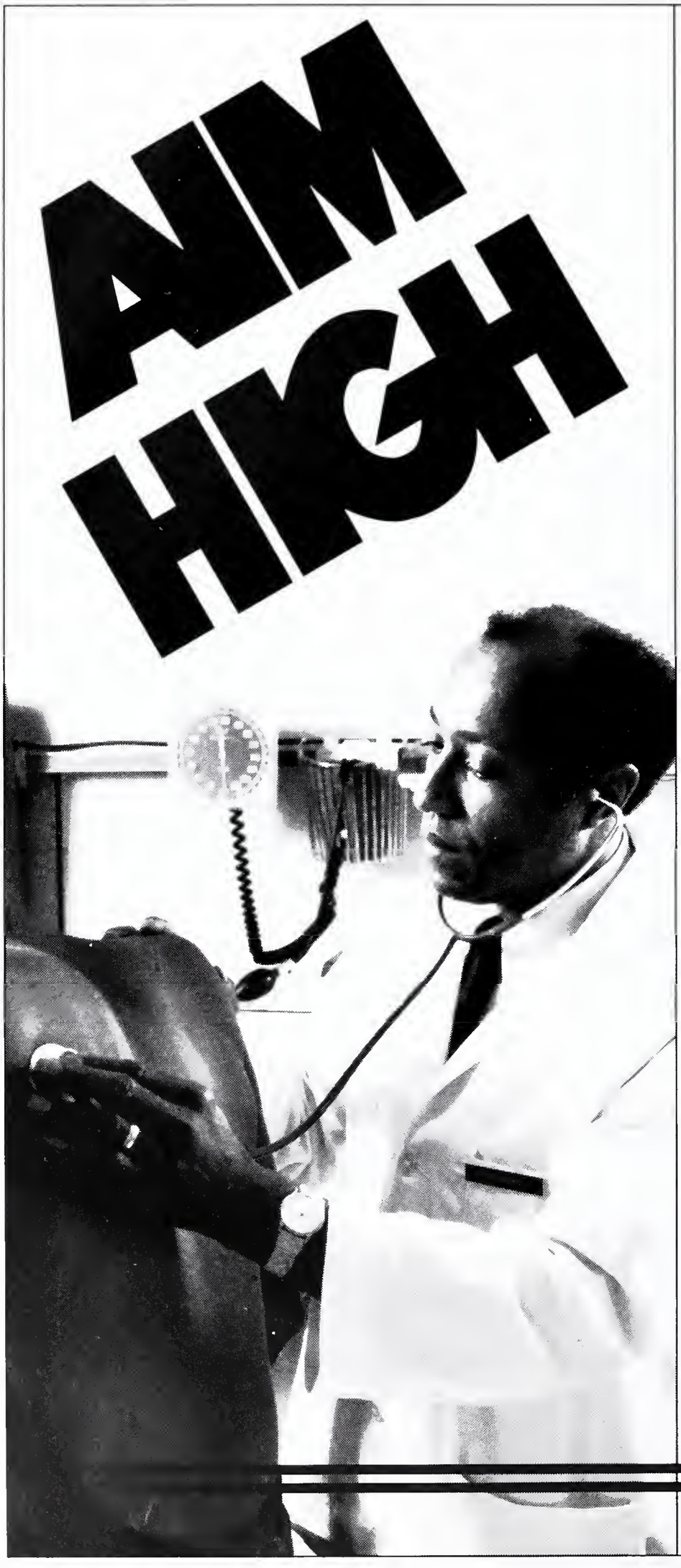
Since our study addressed the impact of both chronic alcohol abuse and dependence on sleep apnea, the number of SAS patients with positive MASTs and/or hazardous consumption were combined. This produced a combined prevalence of 31% (21/68). The combined prevalence in males was even higher 38% (21/56); none of the females screened positive on MAST or indicated hazardous consumption.

Using an Apnea Index (AI) of 20 as a cut-off score to evaluate risk for mortality, 86% (18/21) of the patients with AUD were found to have a high mortality risk related to their sleep apnea (Table 2). AUD and high mortality risk sleep apnea were significantly correlated ($N = 68$, $r = 0.24$, $p < 0.05$).

## Discussion

The prevalence of AUD in the SAS population as determined by MAST was 22%, a figure which compares with the

*(Continued on page 285)* ➤




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prevalence found in other studies of in- and outpatient medical populations[16,17,18]. However, MAST did not identify 9% (6/68) of patients with admitted hazardous consumption. The definition of AUD in the DSM III-R includes individuals who knowingly consume alcohol in the face of medical problems exacerbated by the consumption[12]. In the sleep laboratory, SAS patients with hazardous consumption would fit this definition. Although there was a significant correlation between MAST and the presence or absence of hazardous consumption, the 9% false negative rate was greater than in a study by Cyr and Wartman, who found that in an ambulatory practice population only 7 of 242 individuals were heavy drinkers who did not screen positive on MAST[19].

MAST might not identify certain hazardous drinkers because the weighted items on MAST generally screen for social consequences of alcoholism, which not all alcoholics develop. The medical consequences that are picked up by MAST include only cirrhosis or an identification by physicians that alcohol is the etiology of medical complaints. However, previous studies have demonstrated low physician recognition of alcoholism[17,18,20]. Since the medical consequences of alcoholism and sleep apnea (sleep disturbance, depressive symptoms, hypertension, arrhythmias, etc) are almost identical, symptoms may not have been attributed to the presence of AUD.

Our study also found that 40% of MAST positive patients did not report hazardous consumption. This discrepancy is most likely related to the sleep laboratory policy of advising SAS patients to discontinue drinking. Patients referred to the sleep laboratory are generally quite symptomatic with their sleep disturbance and are routinely informed that alcohol can worsen their symptoms. In addition, physicians who refer patients for sleep studies commonly give the patient the same caveat because of the association between alcohol ingestion and apneic events. Thus, at the time the alcohol consumption portion of the sleep questionnaire was completed, it was unlikely that patients would report hazardous consumption. Lee and DeFrank point out that MAST may not be an accurate reflection of current alcohol consumption and may misidentify a person who no longer consumes alcohol[21]. However, since our study evaluates the possible toxic effect of chronic alcohol consumption, MAST is a useful tool to identify subjects who may have had a past history of hazardous drinking.

To get a more accurate indication of the prevalence of AUD in SAS patients, it is necessary to add the number of MAST positive patients to the number of MAST negative patients who indicated hazardous consumption. This yields a combined prevalence of 31%, 38% in males alone. The high prevalence in males is important because both AUD and sleep apnea are predominantly male diseases.

The 31% combined prevalence of AUD in SAS patients found in this study suggests an association between AUD and sleep apnea. This association cannot be explained on the basis of acute ingestion of alcohol because patients at the sleep laboratory who ingested alcohol prior to the visit were generally not evaluated by polysomnography. In addition, sleep apnea patients with AUD were more likely to have an AI of > 20, indicating there may be an association between AUD and the severity of SAS.

In our study, a sub-sample of 17 of the 68 SAS identified 8 with AUD. None of the 8 had been referred by their physicians for alcohol counseling, although 4 had discontinued or cut down their drinking. As in other studies demonstrating low rates of recognition by physicians and referral for alcoholism treatment[17,18,20], the concern is that complete evaluation of SAS patients should include screening and referral for AUD. This is because acute alcohol ingestion aggravates SAS and patients with AUD are unlikely to quit drinking for prolonged periods without the help of a recovery program. The results of our study suggest that patients with AUD are more likely to present with an AI of 20 or more; He et al demonstrated this degree of severity carries a significant risk for mortality[11]. Therefore, intervention in AUD is as important as therapy in sleep apnea.

The 31% combined prevalence of AUD in SAS patients and the likelihood of having an AI of 20 or more, suggests that the toxicity of chronic alcohol ingestion plays a role in the development of morbidity and mortality in sleep apnea. As a corollary, the morbidity associated with alcoholism may be attributed in part to the medical sequelae of sleep apnea (arrhythmias, hypertension, etc), especially since these are frequently found in alcoholic patients. This raises the question whether sleep apnea may be a common but undiagnosed problem in chronic alcoholics. The finding by Vitiello and colleagues of nocturnal hypoxia in abstaining alcoholics suggests this to be the case[9,10]. Further studies are needed in order to evaluate the association between alcoholism and sleep apnea.

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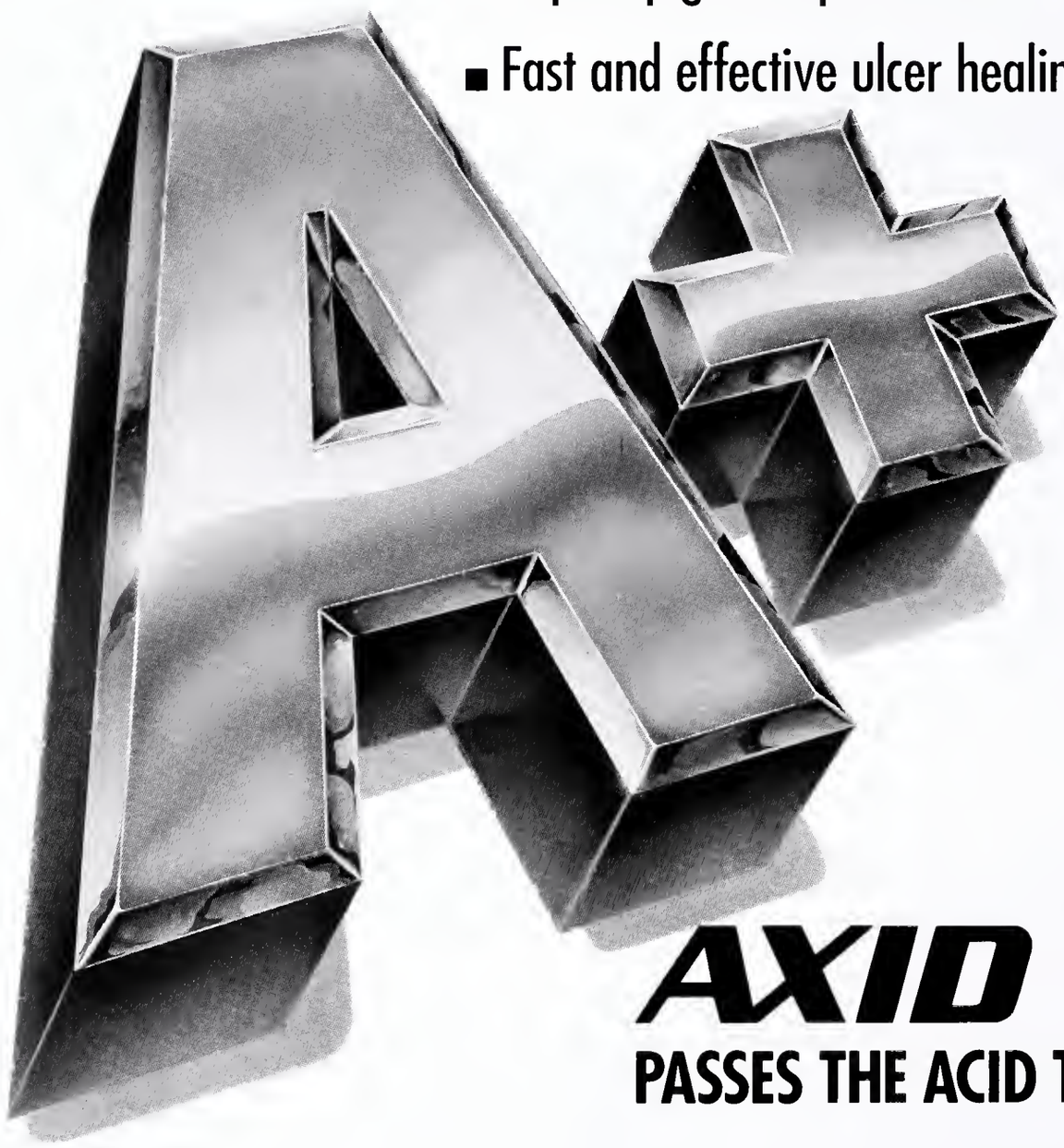

*(Continued on page 287)* ➤

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**Indications and Usage**: 1. *Active duodenal ulcer* – for up to 8 weeks of treatment. Most patients heal within 4 weeks.

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**Contraindications**: Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, $H_2$-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other $H_2$-receptor antagonists.

**Precautions**: *General* – 1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

*Laboratory Tests* – False-positive tests for urobilinogen with Multistix® may occur during therapy.

*Drug Interactions* – No interactions have been observed with theophylline, chlordiazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system, therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

*Carcinogenesis, Mutagenesis, Impairment of Fertility* – A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

*Pregnancy – Teratogenic Effects – Pregnancy Category C* – Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect; but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

*Nursing Mothers* – Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

*Pediatric Use* – Safety and effectiveness in children have not been established.

*Use in Elderly Patients* – Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions**: Clinical trials of varying durations included almost 5,000 patients. Among the more common adverse events in domestic placebo-controlled trials of over 1,900 nizatidine patients and over 1,300 on placebo, sweating (1% vs 0.2%), urticaria (0.5% vs <0.01%), and somnolence (2.4% vs 1.3%) were significantly more common with nizatidine. It was not possible to determine whether a variety of less common events were due to the drug.

*Hepatic* – Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

*Cardiovascular* – In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

*CNS* – Rare cases of reversible mental confusion have been reported.

*Endocrine* – Clinical pharmacology studies and controlled clinical trials showed no evidence of antiandrogenic activity due to nizatidine. Impotence and decreased libido were reported with equal frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

*Hematologic* – Fatal thrombocytopenia was reported in a patient treated with nizatidine and another $H_2$-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

*Integumental* – Sweating and urticaria were reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

*Hypersensitivity* – As with other $H_2$-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

*Other* – Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage**: Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. Renal dialysis does not substantially increase clearance of nizatidine due to its large volume of distribution.

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## ALCOHOL *(Continued from page 285)*

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## RBRVS *(Continued from page 279)*

worse off. No one can say that change won't be coming. Those who don't like the RBRVS and the limits on balance billing should consider the alternatives: mandatory assignment, MD-DRGs, and fees set by the government without any professional input. The RBRVS gives the profession a voice, and it enables us to ward off more objectionable measures.

Finally and most importantly, *the RBRVS is good for our patients.* It will increase the emphasis on preventive care and on evaluating and managing their treatment, and decrease the emphasis on costly high-tech services. It also will help improve access to care in underserved rural areas.

So you see, to paraphrase Mark Twain, reports of the death of the RBRVS are greatly exaggerated. But medicine can't rely on trust that everything will turn out okay. We must fight to preserve the promise of physician payment reform.

That means opposing policies that will undermine the RBRVS (such as a behavioral assumption that would lower the fee schedule conversion factor). It means working to change policies — such as the ban on reimbursement for EKG interpretation — that give with one hand and take away with the other. And it means supporting further changes that will make the system even better.

The RBRVS unites physicians under one fair and rational payment system to fight future detrimental budget cuts in Medicare. Lawmakers faced with a divided house of medicine easily can use that division to cut Medicare payments even further. But if they're faced with a profession that's united under the RBRVS, it won't be easy.

Support for the RBRVS has been right — for our profession and for our patients. The RBRVS will protect undervalued evaluation and management services in an era of Medicare budget cutting, increase access and the emphasis on preventive care for patients, and introduce fairness into the Medicare payment system. *But we must fight together — as a profession — to make sure it is implemented in the way Congress intended.*

■

## Clinical Pathologist's Chair

Francis H. Fukunaga MD

# Monoclonal antibodies

Antibodies are immunoglobulins produced by the B-lymphocytes when an animal is immunized with an antigen. The different clones of B-lymphocytes produce a variety of antibodies that have multiple specificities, even when a pure antigen is used, and this mixture of antibodies is referred to as polyclonal. Since these polyclonal antibodies can react with many antigens, they require extensive purification before being used in diagnostic procedures.

Monoclonal antibodies, in contrast to the polyclonal type, are directed against a single antigenic determinant. Their production is based on the hybridoma technology[1]. Hybridoma is the name of the hybrid product of an antibody producing B-lymphocyte and a mouse myeloma cell. A single clone of cells that produces an immunoglobulin specific for a unique antigen is isolated, harvested and fused with a malignant lymphocyte from a mouse myeloma. The hybrid produced by these 2 cells has properties of both cells. The myeloma cell is a mutated cell that has lost its ability to produce myeloma immunoglobulins but confers an exaggerated cell proliferative ability and the cloned B-lymphocyte confers the ability to produce a specific antibody. The hybrid cells are maintained in culture and produce a specific antibody that reacts with the specific antigen or antigenic determinant (epitope) that had stimulated its formation.

A monoclonal antibody from a given clone is essentially homogenous, is easier to characterize and has a more reproducible behavior than the polyclonal antibodies. The advantages of monoclonal over the polyclonal antibodies are their increased specificity and the ability to produce large quantities from an isolated hybridoma clone. Some disadvantages include the high cost of production and the intensive labor required in the initial identification of the ideal B-lymphocyte clone and the frequent low affinity of the monoclonal antibodies.

Monoclonal antibodies were first used in the cellular phenotyping of hematopoietic cell surface markers; but they are now also used to study autoimmune diseases, infectious diseases, cancer and the assay of various substances. The cellular phenotyping of hematopoietic cell surface markers is important in the diagnosis of the leukemias and lymphomas, and the characterization of the immune deficiency diseases. The first useful reagents were those that defined the T-lymphocyte. Before monoclonal antibodies became available, human T-cells were identified on the basis of

*(Continued on page 290)* ➤





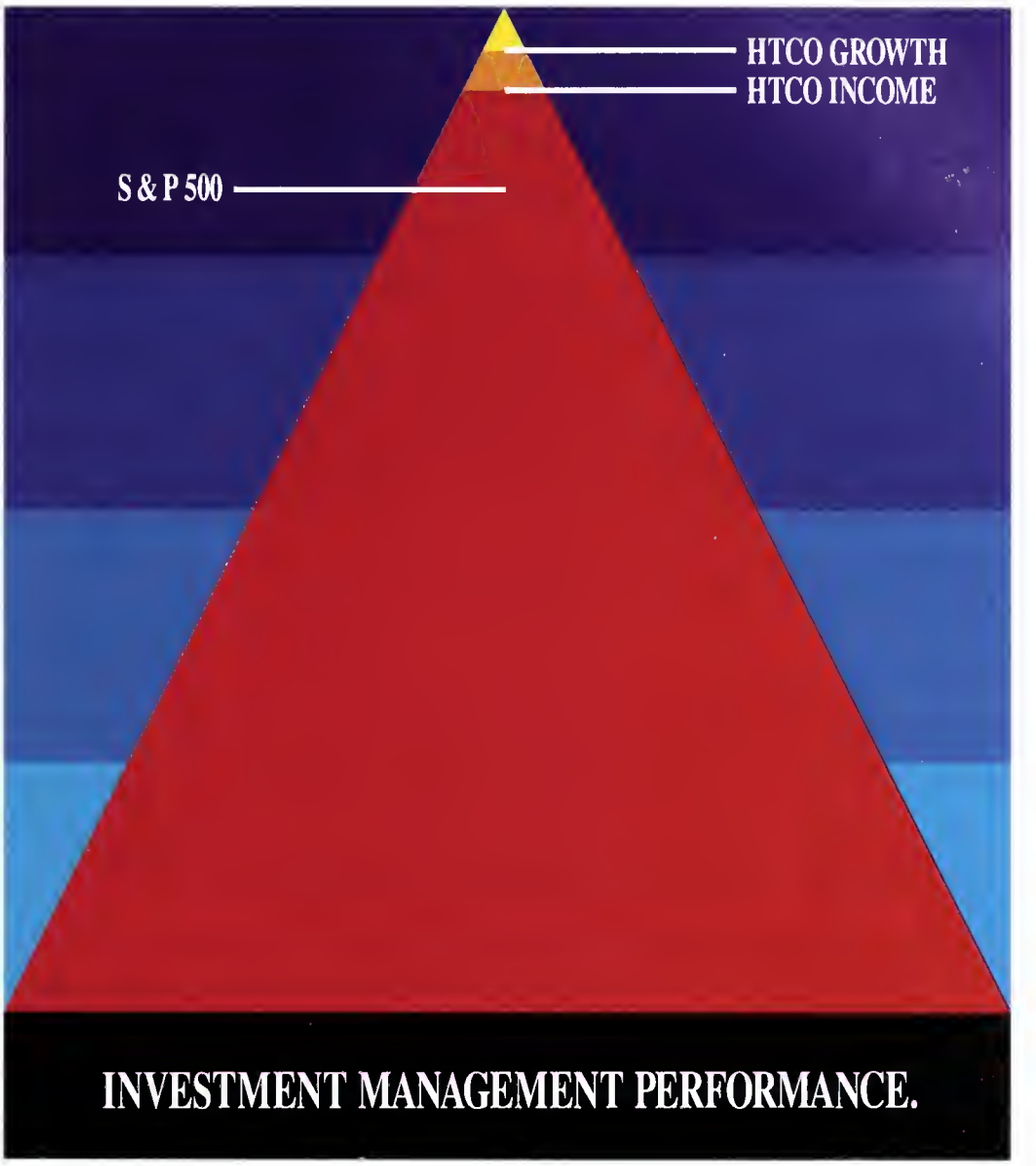
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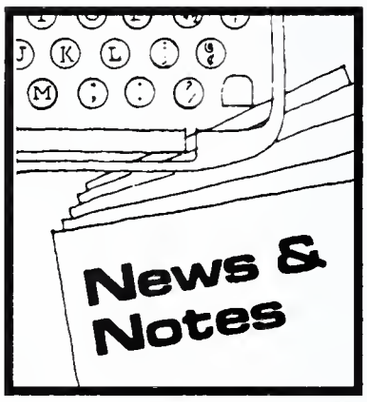
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Henry N. Yokoyama MD

## Letter From a Dear Friend

22 June 1991

Harry L. Arnold, Jr., MD
250 Laurel Street, #301
San Francisco, CA 94118

Dear Henry:

What a heartwarming idea, to have a semicentennial celebration for the Journal! I am grieved to be unable to accept it — and I'll still show up if my situation changes; but at the moment this seems very unlikely. I've had one course of radiation therapy and still have painful consequences and only partial evidence of success — and they will consider repeating it in 2 or 3 weeks. I hope I'll make it in September, but I really don't expect to.

It was a great pleasure and privilege to have you as a member of the editorial staff with your lively readable Notes & News all those years, Henry! Any editor should be so blessed! I'm very glad indeed that you decided to stay on the job; thank you again and again!

Warmest regards!
Harry

## Life in These Parts

*LEECHES?* Straub surgeon Randy Wong became the first in Hawaii to use imported leeches to decongest a myocutaneous flap on a postop oral cancer patient. Randy, while an assistant professor at Pennsylvania State University Hospital, had used leeches in surgery, but the State Department of Agriculture expressed concern. With the advent of microsurgery and myocutaneous flaps, Randy has seen a resurgence of the use of leeches in the past decade...

*SODA CAN PULL TABS HELP PAY FOR DIALYSIS?* Someone asked *Kokua Line* if this was true. "Dick Goad, manager of St Francis Hospital's Renal Institute told *Kokua Line* that no renal program in the nation accepts flip tops in exchange for dialysis treatment. 'Reports that flip tops help dialysis patients is a malicious rumor that gets resurrected every several years'."

*TB CASES:* Richard Frankel, chief of the Tuberculosis/Hansen's Disease Control Branch of Hawaii reports the total number of TB cases for 1990 as 196 — the largest of any year since 1984. Of the 196 cases, 165 (84.2%) occurred in foreign-born immigrants to Hawaii. Richard predicts that the number of cases will increase in the coming years because of increased immigration from high prevalance countries authorized under the Immigration Act of 1990.

*HAWAIIAN HEALTH FAIR:* The 2nd annual Hawaiian health fair was held on May 4th in Hilo, chaired by A. Scott Miles. The goals were to increase health knowledge, perform diagnostic screening and encourage health and fitness among Hawaiians. Seminars were conducted by Terry Shintani, Mans Ghosh, John Uohara, Gerrit Ludwig, Henry Yang, Lambert Lee Loy and Henry Lee Loy...

## Conference Humor

Back in Ireland when I was a medical student, we sat in alphabetical order in the classroom. Being a Ryan, I sat in the back row and couldn't see or hear too well from there. So when we got to the hospital, I took a seat up front. The surgical professor was a Mr O'Connel. That first day, he looked at me and asked, "What's your name?" "Ryan, sir." "Well Mr Ryan, will you explain to the class the causes of ulcerative colitis." We hadn't covered the subject so I replied, "I don't know sir." Mr O'Connel admonished, "Don't say you don't know ... Say you've forgotten."

Several weeks later, we were back at the hospital. Mr O'Connel remembered me. "Mr Ryan, isn't it? Well, Mr Ryan, will you tell the class the cause of Hashimoto's Thyroiditis." "I'm sorry sir ... I've forgotten," I replied. Wherein Mr O'Connel remarked, "Witness one of the tragedies of our times. No one knows the cause of Hashimoto's Thyroiditis and here is a medical student who has forgotten"

(As told by VP Colman Ryan, UCSF)

## Hors de Combat

A telephone survey of 150 physicians, aged 58 or older, in all 50 states by Merrit, Hawkins and Associates, physician search consultants of Irvine, Calif revealed the following: 68% feel that the practice of medicine has become less satisfying in the last 5 years.

41% would choose a field other than medicine if they could choose again.

58% would not encourage a son or daughter to enter the medical profession.

64% identify government intervention as the greatest cause of their frustration.

## Elected, Appointed & Honored

St Francis Hospital installed Kenneth Ing president and chief of staff; Paul DeMare VP; Arnold Siemsen secretary; and Glenn Pang treasurer. Thomas Tasaki was elected member-at-large to the executive board. William Dang Jr is the new chief of cardiology, Michael Imura is chief of psychiatry and Jorge Camara is chief of ophthalmology.

## Of Lawyers and Men

"You have a gun with only two bullets. You are cornered in a small room with the following dangerous species: a lawyer, a snake, and Saddam Hussein. How should you use the two bullets to best protect yourself?" Answer: "Shoot the lawyer twice..."

(As told by our tennis-playing lawyer friend Rick Turpin)

* * *

## CLINICAL PATHOLOGIST'S CHAIR*(Continued from page 288)*

their ability to bind sheep red blood cells to form E-rosettes. A series of monoclonal antibodies can define the various T-cell subsets such as the T-helper inducer and T-cytotoxic suppressor cell. Also available are the antibodies against the B-cell, common leukocyte, monocytes and granulocytes.

Monoclonal antibodies have been used to subclassify non-Hodgkins lymphomas and phenotype the acute lymphoblastic leukemias. Flow cytometry is the most commonly used method for assaying the surface antigen expression of many individual cells. The cells with surface antigens are labeled with a fluorochrome conjugated monoclonal antibody, drawn into the cytometer and quantitated.

Monoclonal antibodies have been developed for identifying various infectious agents: Bacterial antibodies (eg, *Clostridium difficile, Legionella pneumophilia* and *Neisseria*); viral antibodies (eg, Cytomegalovirus, hepatitis A and B and varicella-zoster); parasitic antibodies (eg, *cryptosporidium* and *toxoplasma*); and fungal (eg, *Candida albicans*). Some of these monoclonal antibodies have replaced conventional and microbiological methods because of improved sensitivity, specificity and speed[2].

Monoclonal antibodies are also used in the assay of hormones such as human chorionic gonadotropin, TSH, growth hormone, prolactin and thyroid hormones. There are ongoing studies of how to conjugate radioactive agents to image tumors and metastases, immunotherapy with monoclonal antibodies and therapy with cytotoxic agents that are attached to monoclonal antibodies against tumors.

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"Remember," writes an attorney, "If there were no bad people, there'd be no good lawyers."
(Lou Boyd "Just Checking" June 1, 1991)

## Oncology Dialogue

A 74-year-old Oriental woman, S/P masteetomy (Rt breast Ca); S/P Gastrectomy (Gastric Ca) was worked up for rectal bleeding. She had a low anterior resection for a 1.5 em2 adenoCa of the rectum.

Moderator Glenn Kokame observed: The breast Ca risk factor for colon-rectal Ca is 2 ... ie, the same risk factor value as for Ca of the other breast. Pathologist Grant Stemmerman added: "Early parity is protective for breast Ca. S/P Gastrectomy patients have a 2-to-3 times greater risk for colon-rectal Ca." Glenn: "She has a Duke's A lesion. Should she have radiation or chemo?" Both radiotherapist Ed Quinlan and chemotherapist Ken Sumida agreed there was no need for adjuvant therapy.

The discussion then centered on the possible etiologic factors. Stemmy: The incidence of gastric Ca is less because there is less consumption of processed foods (ie, meats) and greater consumption of fish and fresh veggies (which are anti-oxidants). We may have more colon cancers because of obesity, less calcium intake and greater alcohol consumption. (Heavy alcohol intake displaces cancer inhibitors.) Breast and colon Ca have similar factors: ie, obesity, increased fat intake and late parity.

* * *

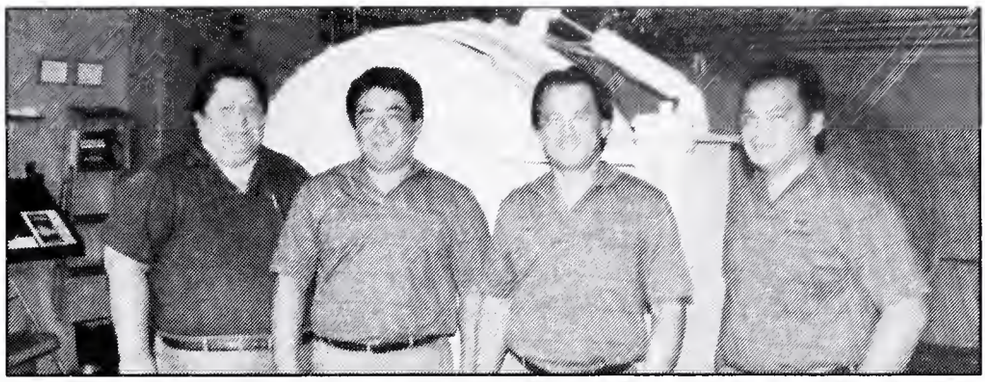
A 65-year-old mechanic had surgery for sigmoid colon Ca in 1985 and refused adjuvant therapy for nodal mets. In the past month, he developed diarrhea, fatigue, a 10-lb weight loss and a large palpable mass. He finally acceded to surgery. Moderator Glenn Kokame aptly epitomized the case as: "Two different cancers in a non-compliant patient." Pathologist Larry McCarthy described the tumor cells as subserosal. Stemmy declared gloomily, "The procedure was palliative at best." Radiologist Ed Quinlan was more hopeful: "He is a potentially curable young 65-year-old. He should have a complete AP resection and then radiation. With the tumor lying on the bladder, we could fry it to a Philadelphia scrapple." The others did not concur. Surgeon Bill Morioka: "Doesn't look good." Glenn: "Evidently, the surgeon tried an AP resection, but it wasn't possible." Ken Sumida deferred to fellow oncologist Carl Higuchi who stated, "The role of chemotherapy in this case will be palliative. Currently there are no agents available which could prolong survival."

* * *

A 45-year-old woman had surgery for cancer of the recto-sigmoid colon with one positive node. Moderator Glenn Kokame queried pathologist Grant Stemmerman: "What is the relation of dietary calcium, lipoproteins, and fat to colon cancer?" Stemmy: "I'm against the current dogma that everyone should get away from saturated fats. The energy balance is more critical ... ie, it is not how much fat we eat, but how much we burn. Animals on a high fat diet and exercise have less cancer than those on a low fat diet and no exercise. Dietary calcium is protective for the distal colon. Migrant groups, especially Koreans and Japanese, have low lipase levels so their calcium lactate levels are lower and this results in more colon cancer. Serum cholesterol has no relation to

*(Continued)* ➤


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# Maka O Ka Kauka

Russell T. Stodd MD

**Self conceit may lead to self destruction. Democracies are most often corrupted by the insolence of demagogues.**

In an effort to make the American Academy of Ophthalmology Board of Directors just a little bit responsive to the rank and file, the Council of the AAO (the only representative forum) unanimously adopted a resolution to discontinue the "slotting" of candidates for election to the Board. However, the Board rejected the resolution, probably because the change would allow a truly competitive ballot. Academy President George Weinstein, current standard bearer for the "old boy club" which runs the AAO, opined gratuitously that we must avoid a popularity contest, and that we should reward those who "know how to get things done." Additionally, he offered a completely unnecessary inflammatory comment regarding the American Medical Association, noting that "it has not been terribly effective in advancing the cause of medicine." Perhaps someone should remind our AAO President that we need all the help we can muster within the body of medicine in our struggles with PPRC, HCFA, Medicare reimbursement and Ms Wilensky's cataract surgery PPO program. Under any circumstances such comments are uncalled for, and they cause one to wonder just who Dr Weinstein was elected to represent? And if this officer is typical of our ingrained leadership system, would a popularity contest be so bad?

**A little work a little play, to keep us going — and so, good day! Let us all be happy and live within our means, even if we have to borrow the money to do it.**

"OK. Let's play a game. It's called "Deposit Insurance," and it's wild. You get to the FSLIC, and you start out with almost all the money in the game. But that changes. I get to be the S&L. I wear white shoes and big, gaudy silver belt buckles and I hang out with the president's kids. And whatever I spend, you cover. When I go shop 'til I drop at the mall? You cover it. When I go on a two-week drunk in Bermuda? You cover. When I go for a little high stakes real estate bingo that goes bust? Covered again. Well, I may have a little trouble getting you to play this game with me, but the punch line is: **You already did!** Have fun? Great. Now we need to cover the $500 billion. No kidding. And thanks for being such a good sport." (Thanks to Prof T. Hazlett, U Cal, Davis.)

**It is not the man who has too little, but the man who craves more, who is poor.**

The latest ARGUS quoted a marketing survey of ophthalmologists activities with some interesting findings. Currently, 3% of respondents use TV advertising, 4% use radio, 13% newspapers, and 7% bulk newsletters. Ophthalmologists attitudes were almost inverse with about 70% finding TV and radio ads "very distasteful" while about 3% found them highly acceptable. There is one certainty in all this — the people who sell the newsletters, TV ads, radio spots, etc, find all such devices *highly acceptable.*

**Refrain from peering too far — it is easy to propose impossible remedies.**

Arthur D. Little Inc., the overblown Massachusetts consulting firm, warns that the quality and performance standards, sometimes called guidelines, established by the Blues and Medicare, will eventually serve as the guide for reimbursement. Little predicts that eventually doctors will have to check with a computer before ordering any tests or performing any procedures. When that day comes, the doctor will be redundant. A clerk with a clipboard, a questionnaire, and a cookbook will suffice.

**Hurried and worried until we're buried.**

Didja ever wonder who watches the watchers? In the sunny golden state, California Medical Review Inc., the nation's largest Medicare peer review organization, settled out of court to the tune of $1.2 million to be paid to the federal government. Two CMRI employees were charged with billing Medicare for thousands of patient record reviews that were never performed. Don't they call that fraud? The PRO refused to admit liability, but agreed to submit to a HCFA "contract integrity compliance program." The HCFA response is somewhat ironic in

*(Continued on page 294)* ➤

## NEWS AND NOTES *(Continued from page 291)*

colon cancer."

Glenn to gastroenterologist Warren Ono: "Warren, how about follow-up on this patient?" Warren: "She should have a sigmoidoscopic exam in 3 to 6 months and an annual colonoscopic exam for 2 to 3 years." Glenn: "How about CEA levels?" Warren: "Annual CEA levels." Chemotherapist Ken Sumida: "I would do CEAs every 6 months." Fellow chemotherapist Mel Inamasu piped up: "CEAs every 3 months for the first year." Glenn to radiologist David Sakuda: "How about BEs?" David: "BE every 2 or 3 years. Most curable cancers do not grow that fast. Enemas are adequate studies along with colonoscopy."

### Miscellany

When VP Dan Quayle met Soviet President Gorbachev for the first time, he observed, "President Gorbachev, do you know you have something on your forehead?" "Yes, it's a birthmark," replied Gorby. The VP quizzed, "How long have you had it?"

(Contributed by Hilo internist Henry Lee Loy)

* * *

Have you heard what happened to the bulimic patient with Alzheimer's? She got into trouble when she forgot to vomit.

(As told by George Seiberg)

* * *

The young man, conscious of safe sex, had a date for the weekend and stopped by the drug store to purchase a condom. He was told he could purchase only packets of 3, 6 and 12. "Why the packet of 3?" he asked. The pharmacist patiently explained, "Well, one for Friday, one for Saturday and one for Sunday." "Then, why the packet of 6?" "Well, the college student needs 2 for Friday, 2 for Saturday and 2 for Sunday." "Well, how about the packet of 12?" The pharmacist elucidated, "Well, young man ... Older married folks need one for January, one for February, one for March, etc, etc..."

(As told by our friendly pharmaceutical rep John Howitt)

### Obituaries in Brief

Retired pediatrician John Kometani MD, 81, of Honolulu, died on February 2 in Kuakini Hospital.

* * *

Masato Matthew Hasegawa MD, 84, of Honolulu, died April 14 at his Nuuanu home.

* * *

Hawaii Psychiatric Medical Association President Lois Fishler MD died at Queen's Medical Center on July 16.

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**MAKA O KA KAUKA** *(Continued from page 292)*

that when a physician bills fraudulently (or even accidentally in error), he will suffer heavy financial penalties, may lose his license to practice medicine, and may go to jail. But of course, Richard Kusserow is paid to bash *doctors.*

**The good Lord set definite limits on man's wisdom, but set no limits on his stupidity.**

Medical records are records. They are open to scrutiny, and have an everlasting life of their own. When charting, be certain that you document thoroughly and appropriately, but avoid flippant entries or foolish witticisms. The following are actual statements written on charts:

1. An elderly feeble patient — doctor noted under prognosis "PBBB" which turned out to be his abbreviation for *"pine box by bedside."* Settlement $38,000.

2. After a mother's complicated labor, the obstetrician delivered a norma Apgar score infant boy, noting "UKD." When the child was diagnosed with cerebral palsy, the doctor's statement was explained as *"ugly kid disease."* The carrier settled for $50,000 although there was no evidence of malpractice.

3. A patient returned repeatedly to a family practitioner who noted "P3" on his chart. Later on when the patient was found to have Pancoast's tumor, the FP was sued for failure to diagnose. Again there was no negligence, but the abbreviation for *"piss poor protoplasm"* invalidated any defense. The insurer paid $118,000 to close the case.

4. These were comments about particularly obnoxious patients — *"Hold pillow to face for 4 hours, repeat every 15 minutes."* Later the patient had an MI and expired. A physician prescribed *"high speed lead therapy,"* and once again the offensive patient died.

**Addenda —**

— You know you are getting old when your wife gives up sex for Lent, and you don't find out till Easter.

— Zsa Zsa Gabor has a new perfume called "Conviction.' You just slap it on.

— In an effort to reduce traffic in Tokyo, parking violations bring a fine of $1400! (That might even help Waikiki!)

Aloha, and keep the faith.

rts

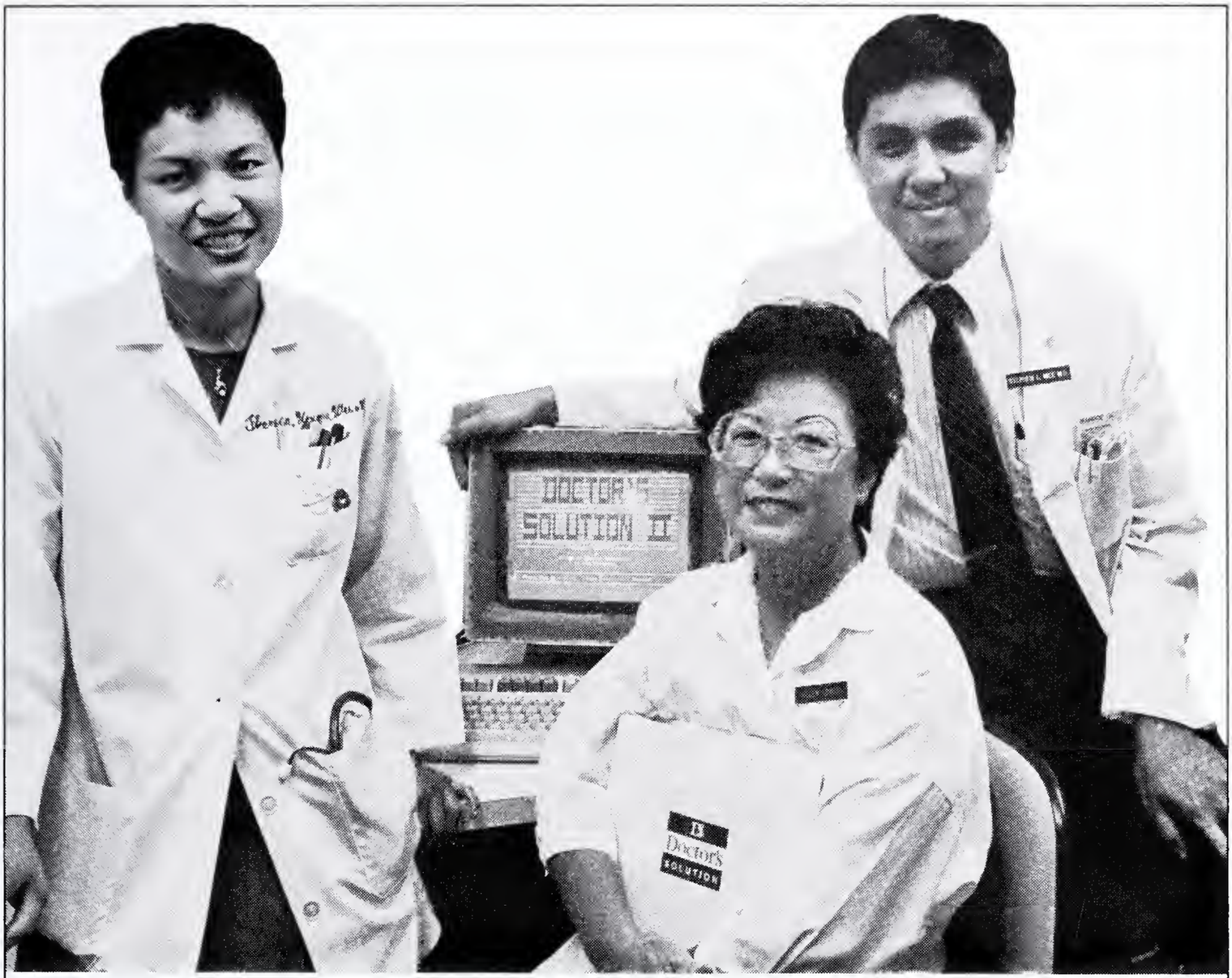
## Revenge of an Older Driver

A woman with patience sat waiting
For a free parking space at the mall,
When a sporty Corvette zipped around her
And took it in no time at all.

"That's mine," said the indignant lady,
"You smart aleck, you make me sick."
"C'mon," the punk grinned from the sidewalk,
"That's life when you're young and you're quick."

So the lady reversed her Mercedes
And rammed the Corvette at full pitch.
He screamed, and she answered, "Look, sonny,
That's life when you're old and you're rich !"

Kukui O Pohai Nani
Volume 25, Number 10
November 1990




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SEPTEMBER 1991
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# In Memoriam



Harry L. Arnold Jr MD
1912 - 1991

The Hawaii Medical Association, its members and its staff, regret very much the passing of

## Harry L. Arnold Jr MD

on 13 August 1991 at his home in San Francisco. We at the Hawaii Medical Journal had hoped to have him join us on the 6th of September for the 50th anniversary celebration of the Journal that he founded and of which he was the editor for the next 40 years. It was fated otherwise.

The September semicentennial issue is dedicated to Harry's memory.

Our sincere message of condolence is hereby extended to his family.

**Academic**

A.B. with distinction, University of Michigan, 1932.
M.D. cum laude, University of Michigan, 1935.
M.S. in dermatology and syphilology, University of Michigan, 1939.
Instructor in Dermatology, University of Michigan Medical School, 1937-1939.
Clinical Professor of Medicine (Dermatology), School of Medicine, University of Hawaii, 1969-1991.

**Professional**

Dermatologist, Straub Clinic, Honolulu, 1939-1977; Chief, 1939-1969; Emeritus Staff, 1977-1991.
Diplomate, American Board of Dermatology, 1941.
Consulting Dermatologist to Leahi Hospital, Shriners Hospital, Wilcox Memorial Hospital, and Lanai City Hospital.
Emeritus Consultant, Tripler Army Medical Center, 1980-1991.
Chief of Dermatology staff, The Queen's Medical Center, 1965.
Member, Editorial Boards of *Group Practice* 1965-70; *Cutis* 1965-; *J International Medical Research*, 1972-1991; *Archives of Dermatology*, 1973-1991; and *Jour Am Med Assn*, 1974.
Member, American Board of Dermatology (representing AMA Section) 1966-1975; President, 1973.
Consultant on dermatological terms, Dorland's Illustrated Medical Dictionary, 25th edition (1974).
First Frederick G. Novy, Jr. Visiting Scholar in Dermatology, U.C. Davis, 1975.
Editor Society Transactions, Archives of Dermatology, 1976-1978; International Journal of Dermatology, 1978-1991.
Editor, Hawaii Medical Journal, 1941-; Schoch Letter, 1975-1991.
Straub Clinic Proceedings, 1940-1977, Emeritus Editor, 1980-1991.
Co-author, *Andrews' Diseases of the Skin*, 7th edition (Domonkos, Arnold, and Odom) 1981.

**Fraternities**

Zeta Psi, University of Michigan, 1928.
Nu Sigma Nu, University of Michigan, 1932.
Kappa Beta Phi, University of Michigan, 1934.

**Honor Societies**

Alpha Omega Alpha, University of Michigan, 1935.
Phi Kappa Phi, University of Michigan, 1935.
Sigma Xi, University of Hawaii, 1954.

**Membership in Professional Organizations**

Honolulu Medical Society, 1939 (President, 1949). (Life Member, 1979).
Hawaii Medical Association (President, 1951). (Editor, Hawaii Medical Journal, 1941-1991).
American Medical Association (Delegate from Hawaii, 1956-1961; Secretary; Section of Dermatology, 1961-1963; Chairman, 1964; Alt. Delegate, 1965-1973; member Section Council, 1971-1976; Delegate from Section, 1974-1976.
Hawaii Academy of Science, 1942 (President, 1952)
American Association for the Advancement of Science (Fellow), 1954.
American Academy of Dermatology and Syphilology, 1940 (Director, 1948-1951, 1962-1965, and 1973-1976). (Vice President, 1965). (President, 1975-76). Editor, The Schoch Letter, 1975-1978. Dome Lecturer, 1975. Honorary Member, 1978.
Society for Investigative Dermatology, 1941.
Hawaii Dermatological Association (Secretary, 1943-1953; President, 1955).
International Leprosy Association, 1943 (Corresponding Editor for the U.S.A., International Journal of Leprosy).
Sociedad Cubana de Dermatologica y Sifilografiz (Corresponding, 1955).
Sociedad Cubana de Leprologia (Corresponding, 1955).
American College of Physicians (Fellow), 1946.
American Dermatological Association, 1947. (President, 1971).
Associacion Argentina de Dermatologia, Venerologia y Leprologia (Corresponding, 1956).
Sociedad Venezolana de Dermatologia, Venerologia y Leprologia (Corresponding, 1965).
Sociedad Mexicana de Dermatologia (Honorary Member), 1961.
International Society for Tropical Dermatology (Vice President for U.S.A., 1959-1964).
Straub Medical Research Institute of Hawaii, 1960 (President, 1960-1964).
Pacific Dermatologic Association, 1948 (President, 1968).
Royal Society of Medicine (Fellow), 1970.
Brazilian Dermatological Society (Honorary, 1974).
New York Dermatological Society (Honorary, 1977).
North American Clinical Dermatological Society (Honorary Fellow, 1977).
College of Physicians of Philadelphia (Fellow), 1977.
Dermatological Society of South Africa (Honorary, 1978).

**Civic Organizations**

Chamber of Commerce of Honolulu (Director, 1952-55 and 1961-1963).
Hawaii Board of Medical Examiners (Secretary, 1960-1963).
Honolulu Automobile Club (Director, 1960-1968).
Honolulu Wine & Food Society, 1963 to date. President, 1978.
Club 15, 1964-1967.
Social Science Association of Honolulu, 1969-1991.
American Cancer Society, Hawaii Chapter, 1951-1975 (Director, 1968-1971).
Regency Condominium Association, Honolulu (President, 1971-1974).

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Who's Who in America; Who's Who in the World
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# The *Journal's* Fiftieth Anniversary

In September 1941, the *Hawaii Medical Journal* was born. Harry L Arnold Jr MD was its first editor (we might even say its founder) and continued to be that for the next 40 years. Originally with the Straub Clinic, he was retired and lived in San Francisco. We honored him by listing him in the *Journal's* masthead as editor emeritus. We could have, although he would probably have objected — and perhaps found fault with the terminology — dub him editor elegantarum to indicate that he maintained his interest in his baby by scrutinizing each issue for any abuse of language and loss of high standards.

The nucleus of an idea to commemorate the *Journal's* semicentennial anniversary came from Becky Kendro, HMA Assistant Executive Director, Community Affairs. Becky has been on staff at the Hawaii Medical Association for 24 years. She broached the subject at a meeting of the HMA's Publications Committee, chaired by Henry Yokoyama, early in the year. Since then, she and staff Director of Communications Jan Estioko and editorial assistant Daisy Canite have been hard at work fleshing out the details for this special anniversary issue and the planned celebration at the Hawaii Medical Library on 6 September 1991.

The committee members have also thrown their weight behind the project, particularly the five who have picked a decade of issues to peruse, single out a particular article for reproduction and then write a brief comment on that decade. Fred Gilbert Jr took the 1940s; Nathaniel Ching the fifties; Allen Strasberger the sixties; Bob Jim the seventies and Jim Lumeng the eighties.

Each one had great difficulty in picking out just one article out of the many excellent treatises published in the issues of the *Journal* in that decade.

In particular, we agreed with Fred Gilbert, who had the difficult task of how to review the forties — the decade that was almost wholly consumed by the focus on World War II and its aftermath. He thought to vary from the agreed-upon format of choosing one article, in favor of excerpting the highlights. We thought Becky Kendro's input was well worth adding besides.

The dilemma in making the choice arose from the special wartime issue at the first anniversary of the fledgling *Journal* and in 1947-48 issues wherein Harry, the editor, elected to feature a 22-page REMINISCENCES OF DECEMBER THE SEVENTH. We agreed, despite its great interest, that it would not be practical to republish the entire lot of 8 articles in the current issue.

Becky gleaned the following from the imposing array of bound volumes covering 50 years of publication: The *Journal* came out bimonthly from 1941 to 1947; since then it has been published monthly. The cost of an annual subscription was just $2 in 1941, as compared with the current $12. This is for non-members and others; members have always had it included in their dues.

After HLA Jr retired, Doris Jasinsky MD, as assistant editor since 1974, became managing editor (editor-in-chief, in fact) in 1980 until the House of Delegates elected Fred Reppun to become editor from 1985 on.

Other managing editors/business managers of note were: Elizabeth D Bolles from 1941 to 1945 (see her editorial in Volume 1 Number 3, January/February 1942) followed by Edith Bennett 1946 to 1956, Lee McCaslin in 1956 to 1970, Marilyn Wall in 1971 and Paul J Steward 1971 to 1980.

Becky Kendro of the HMA staff was the official editorial assistant 1980 to 1987, sharing the duties with Jennie Asato during that transitional period. Jennilyn Etrata and Charlotte Beal did their stints during some of those years until Catherine Hiles Jacobs took over 1988 to 1990. She was succeeded by Daisy Canite, the current editorial assistant.

George Mason, publisher of Pacific Business News, was instrumental in keeping the *Journal* from foundering during lean years. His company, Crossroads Press, and its vice president Steve Lent took on the publishing chores in August, 1981 and have been bulwarks of support in being able to keep the enterprise solvent. For the past 10 years, Steve and his sales staff have garnered enough advertsing to provide the space needed to maintain the interest of our readers (by maintaining a proper ratio of ads and non-advertising space, the *Journal* has been a financial asset to the HMA, although as its house organ, the HMA has an obligation to continue its publication).

The printers were Watkins Printing from 1941 to 1945, followed by SB Printers from 1946 to 1974. Edwards Enterprises printed the *Journal* until 1981. The current printer is Tongg Publishing Co.

The Journal has had peripatetic "regular" contributors. However, none has been so steady and so faithful as news editor Henry Yokoyama and his *News & Notes*. To our way of thinking, Henry's input is what has generated the interest of our readers (and a high subscription rate) more than any other *Journal* entry.

That column started 50 years ago. An incomplete list of "news editors" includes Sam Allison, William John Holmes and Masato Hasegawa (the latter two are recently deceased) in the early years. Henry took over in 1964 and has pulled the far elements of our professional association together communication-wise for 27 years. Poor Henry is tired, but we hope he will continue until he dies "with his editorial boots on"!

Henry has also been the perennial chairman of the HMA's Publications Committee for as long as I can remember. HLA Jr's recent response from his sickbed, in a letter addressed to Henry's invitation to attend the September 6th celebration,

*(Continued)* ➤

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*Beyond the call*

included a last paragraph: "It was a great pleasure and privilege to have you as a member of the editorial staff with your lively readable *News & Notes* all those years, Henry! Any editor should be so blessed! I'm very glad indeed that you decided to stay on the job; thank you again and again! Warmest regards!" It was signed simply "Harry."

We could extol the contributions of many, many others in the history of the *Hawaii Medical Journal*, still without being able to name them all.

Francis Fukunaga MD has written *Clinical Pathologist's Chair* since 1975, and there have been Book Reviews, X-Ray Reviews and even the newsletter of the Hawaii Nurses Association included in the *Journal*.

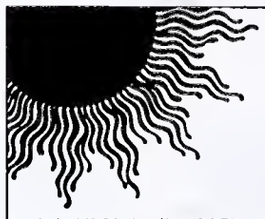
Have we kept the faith with Harry, who wrote in his first editorial 50 years ago: "If to the betterment of the profession, and to the betterment of Hawaii, the efforts of the present and the future editorial staffs are dedicated, the success of the *Journal* is assured"? We hope so.

The 50th anniversary of the founding of the *Hawaii Medical Journal* nearly coincides with the 50th anniversary of the attack on Pearl Harbor and the beginning of America's active participation in World War II. America became a world power as a consequence. It is equally to be hoped that America's future in the world of nations will be towards the structuring of peace with freedom from wars and the advancement of knowledge in the way peoples can get along with each other, as well as learning how to preserve and protect our environment.

Medicine has come a long way since then, as Becky says in her segment of the article on the decade of the forties in this special issue of the *Journal*, not only nationally and internationally, but also in Hawaii. Hawaii can be proud of its being known as the "health state," although it is only 32 years old as a state in the Union. Thanks to our current Director of Health, Jack Lewin MD, and our legislators in current and previous years, Hawaii is foremost in the nation in providing access to medical care and medical care of high quality.

If the past 50 years are an indication of great progress in medicine in Hawaii, it bodes well for the future. The *Journal* will try to keep abreast of that trend and perhaps help in its moulding.

J. I. Frederick Reppun MD
Editor



## HMA 135th Annual Meeting at Westin Kauai

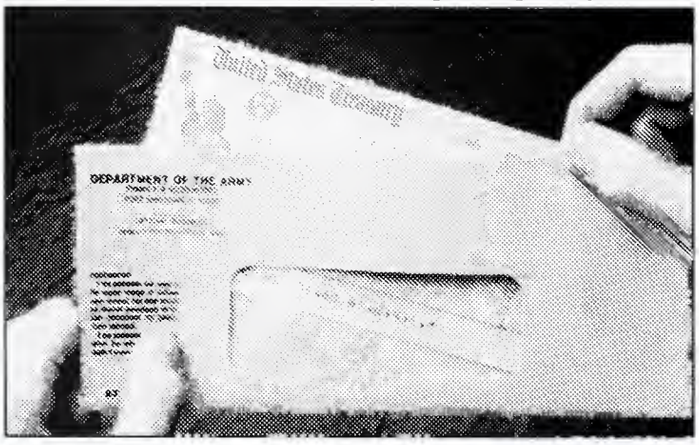
Join HMA for the 135th Annual Scientific Meeting on **October 11-13** at The Westin Kauai. This year's program will feature four exciting themes:

- Geriatric Medicine
- Military Medicine in Hawaii
- Native Hawaiian Health Care
- Health Care Economics

In addition to CME sessions, the meeting will feature exhibits, the presidential inauguration, golf and tennis tournaments. Be sure to mark your calendars so you don't miss this exciting and fun-filled event! Deadline for hotel room reservations is September 11 Call HMA at (808) 536-7702 if you need an additional program.


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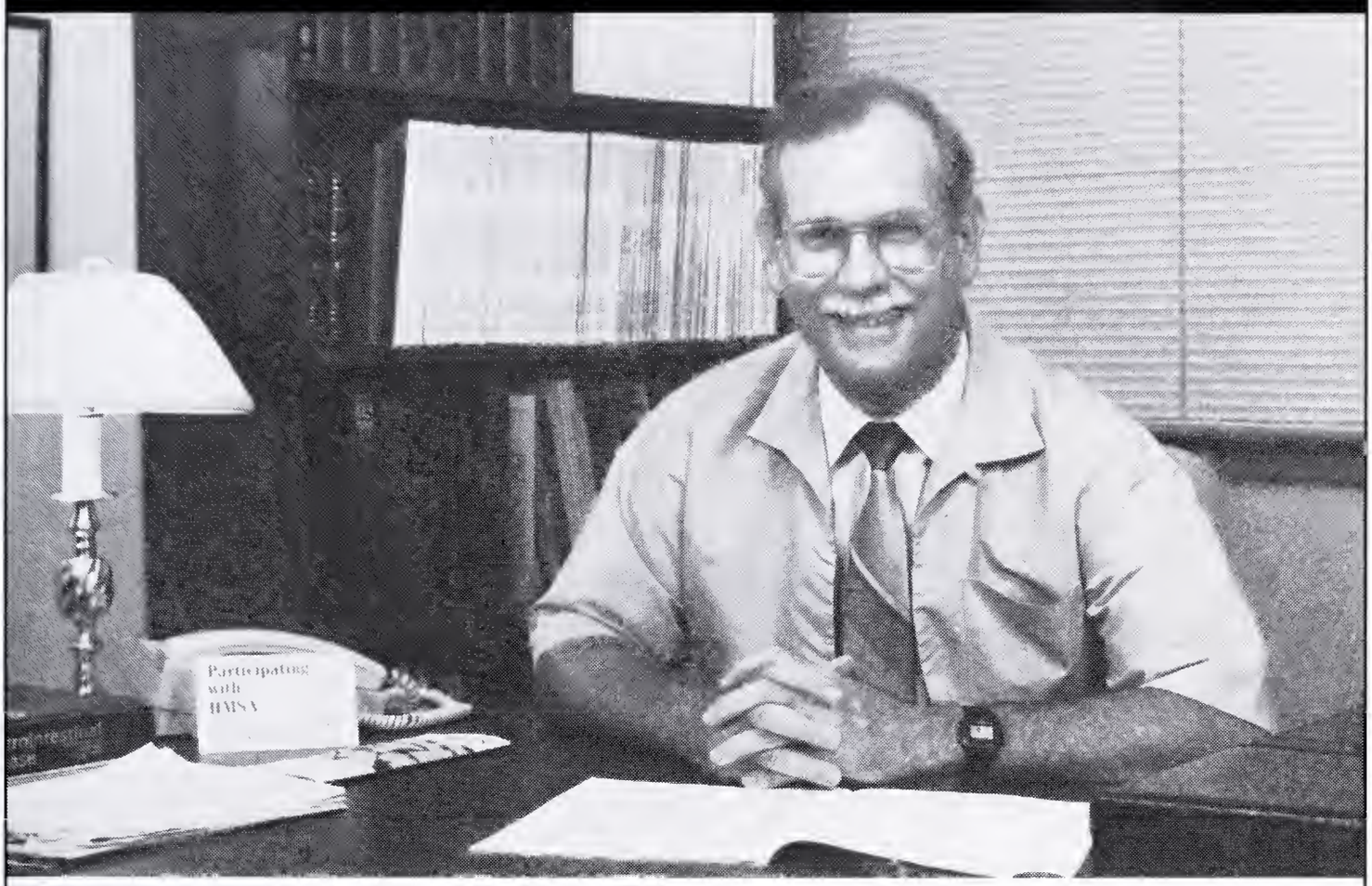
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# A Tribute to J I Frederick Reppun MD
## Hawaii Medical Journal Editor



Authors beware: As the *Journal* celebrates 50 years, your editor, the country doctor, has traded in his stethoscope for a brand new fax machine — the better to hear from you, his friends and colleagues. His patients, in celebration of his 52 years of practice, honored him with a case of Chivas and a new copy machine, too — smoother editorials? A carbon copy of the editor? These events are cause to review some of his contributions to the *Journal*.

J I F Reppun's first published article in the *Journal* described his experiences with an eclamptic patient in the early days of his Kaneohe practice (January-February, 1958). His future as an editor is evident from his comments on the case:

> "We were surprised when after a long and serious exhortation, she did turn up at the hospital . . . The fact that neither she nor her unemployed 280-pound husband had to worry about the cost — typically again, they were on welfare, seemed to make little difference to them."

With these experiences, it is no wonder he pushed to have a hospital built in Windward Oahu.

The next documented encounter between Fred and the *Journal* was *Early Hypernephroma Revealed by Trauma*, coauthored with Fred Warshauer (July-August, 1964), a long interval between articles by Fred's standards today.

Do you remember the legal controversy over hospital privileges that involved all of the hospitals on Oahu? I read about it in detailed letters from my father while I was in college. *Privileges* (March-April, 1967), was the first of a continuous stream of editorials contributed by Fred. There is an infamous medical student today who could have benefited from the last sentence:

> "The medical newcomer is well advised to clear away all such obstacles to the practice of medicine in hospital, BEFORE he hangs up his shingle!"

*Privileges* was followed in the same issue by a biography on his father Carl Frederick Reppun, MD and a commentary written under the banner of the Hawaii Academy of General Practice: *A Waste of Time*. Again, his last sentence has a punchline that rings true today:

> "Legislators seem to be totally unaware of the cost in time, an invaluable commodity these days, associated with the carrying out of the simplest of rules, regulations and laws."

Of course, the regulation of medicine has only gotten worse. Over the years, my father has been hammering at me, like all of you, with similar messages. Where does it come from? I know that during Fred's medical school and internship days, he spent a lot of time with his wife's father, Charles F Engle, MD, an industrial physician for Westinghouse and with A I Stewart, MD, his wife's uncle, a truly horse-and-buggy doctor. He probably heard comments from Uncle Doc as I did when I told Uncle Doc that I was entering medical school. "I am not sure that I would go into medicine again. The government is going to mess it all up!"

Just a few more quotes from Fred's early editorials — he has covered just about everything.

Taken out of context from an editorial on physicians' assistants and *Health Womanpower* (September, 1971):

> "Why not take from the same pool from which these ICU nurses came, others who are well educated and experienced in nursing care, send them to appropriate training centers, such as medical schools and hospitals, and let them become the first of the true physicians' assistants."

From a summary of the *Eleventh Pan-Pacific Surgical Congress* (January-February, 1970):

> "Heart transplants, reduced mortality and morbidity, freer abortion, contraception promotion, what does it add up to? More population. The prospect of a world overpopulated calls to mind the rat experiment — cannibalism back again. Maybe the Near East is foreboding, maybe the Woodstock gathering too, Auwe!"

A review of Fred's contributions to the *Journal* since he was named Editor could go on at some length. I thought that my father had been Editor for at least 20 years. With all the contributions prior to Doris Jasinski's announcement in January, 1985 of *Our New Editor,* Harry Arnold could not have had it much easier. In Fred's *Credo* which followed the announcement he thought about sitting "close to the door and as far away from the Committee chairman's seat" as Harry Arnold did. Of course he followed his Credo with two editorials: *Inconsistencies in Public Attitudes*, and *More on Cost Containment vs Quality*. As you know Fred still sits up front and contributes his all.

Thanks from all of us, Dad, and keep it up!

Thomas S Reppun MD

# The decade of the forties in the *Journal*

The Territory of Hawaii entered the 40s with plantation medicine dominating the practice of medicine, paralleling sugar and pineapple as the major source of income in the Territory.

Plantation hospitals, staffed by excellent general practitioners, provided care for patients on all of the islands. Nils P Larsen, MD, Medical Director of the Territorial Association of Plantation Physicians (TAPP) personally selected most of the physicians and put considerable emphasis on those with interest and capabilities in keeping plantation workers and their families healthy, in addition to treating their illnesses.

The Hawaii Medical Service Association (HMSA) was but a few years old; its membership increased from several hundred to several thousand during the early 40s. A family in the plantation system could obtain comprehensive care, including hospitalization, for $5 to $10 a month in 1941. (See Vol 1 No 1 September 1941 p 41 following.)

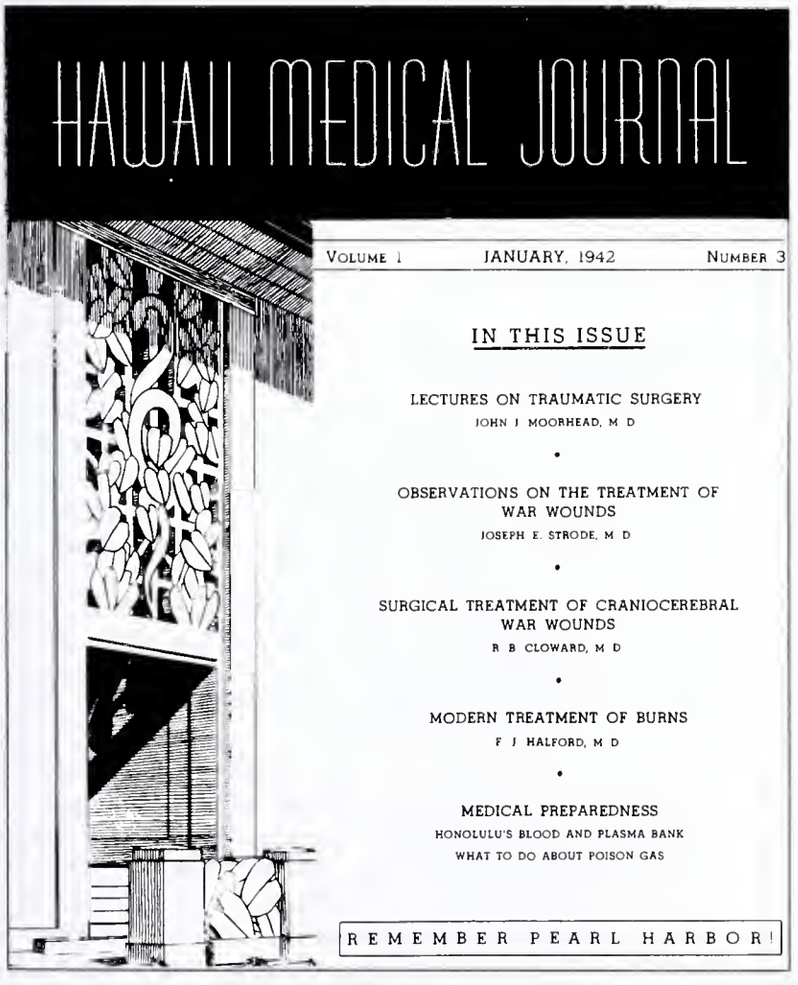
Only the few, time-dominated, wealthy islanders flew to the Mainland and back on the Pan Am flying boats ("Clippers"). Everyone else made the 5-day voyage one-way on the Lurline or the Mariposa.

The war in Europe was in a place that few of us in Hawaii had ever been or hoped to see. Most of us were not overly concerned about the war ever involving Hawaii.

About 7 a.m. of a fateful Sunday on Dec. 7, 1941, all of this changed with the bombing of Pearl Harbor; Hawaii became the center of the U.S. war effort in the Pacific. Millions of men, untold tons of munitions, ships and planes passed through Hawaii on their way to combat areas.

Five years later in 1946, the war was over and Hawaii was no longer a remote, almost unknown cluster of islands with a lifestyle more that of the 19th century than the 20th. Agriculture rapidly waned as the major industry; medicine as part of the vast social changes — stimulated to a great extent by the war — became more of a science and less of an art. General practice gave way to specialization and subspecialization. Disease was diagnosed and treated more effectively but with the realization by some that there was more concern about the disease rather than the patient who had the disease.

Dr Harry Arnold Jr was the editor of the *Hawaii Medical Journal* from its inception, Volume 1 Number 1 in September 1941 (see his first editorial that follows), and for the next 40 years. That first issue contains an account of the essence of plantation medicine as formulated by Nils P Larsen — the "father figure" for all plantation physicians; it was worth reproducing here in part (which see next).


HAWAII MEDICAL JOURNAL

VOLUME 1 JANUARY, 1942 NUMBER 3

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OBSERVATIONS ON THE TREATMENT OF WAR WOUNDS
JOSEPH E. STRODE, M. D.

SURGICAL TREATMENT OF CRANIOCEREBRAL WAR WOUNDS
R. B. CLOWARD, M. D.

MODERN TREATMENT OF BURNS
F. J. HALFORD, M. D.

MEDICAL PREPAREDNESS
HONOLULU'S BLOOD AND PLASMA BANK
WHAT TO DO ABOUT POISON GAS

REMEMBER PEARL HARBOR!

The second issue came out in November. Pearl Harbor and the start of World War II intervened in December. In the January/February 1943 issue, Harry put together an entire issue on the war and in later years an 8-part series of "Reminiscences of December Seventh" that took 22 pages. There were 8 physicians who recorded their experiences, ending with one by famed Hawaii surgeon James R "Jimmy" Judd MD.

Unfortunately, space and 1991 dollars do not allow us to reproduce these, but the reader is invited to review this most interesting period of medical history in Hawaii by coming to the HMA offices and asking to see the issues which are bound in large, heavy volumes.

Nearly the entire decade of the 40s was taken up by the war. Instead of choosing just one article out of the Journal issues of that decade, we have asked Becky Kendro, HMA Assistant Executive Director, to contribute her remarks. They follow.

Fred I Gilbert MD
Honolulu

*(Continued)* ➤

HAWAII MEDICAL JOURNAL

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# EDITORIALS

September 1941, Vol 1 No 1

## 'The Bulletin is dead. Long live the *Journal*.'

Establishment of the *Hawaii Medical Journal* signalized by the appearance of this Number 1 issue of Volume 1, should not be considered an end in itself — even though it represents the fulfillment of an aspiration which certain members of the profession have long kept alive.

This is a beginning, rather than an end attained, and it behooves the staff and the rest of the profession to pause to consider of what it is the beginning — what is the task to which the career of the *Journal* must be dedicated if it is to justify its existence.

Our medical friends from the Mainland, who from time to time have visited Hawaii, have been, with a reassuring degree of unanimity, most complimentary in their estimation of the quality of medicine practiced in the Islands, and of the standards maintained by the profession of Hawaii as compared with those of similar sized population groups elsewhere in the United States. With justifiable pride, the profession here can point to items of individual and group accomplishment which have contributed to the well-being and progress of the community. More often than not, however, it has been individual rather than collective effort which has won results — and seldom if ever has the full force of the whole, united medical profession of Hawaii been exerted to the full measure of its capabilities.

Any factor which tends to marshal and direct this power of a united profession is to be welcomed, and such a factor for good in Hawaii, the *Journal* well may be.

Knowledge is a source of power, and the dissemination of knowledge is one task to which the *Journal* is dedicated — not especially generalized knowledge of the sort which can be gained from the perusal of the old established national medical journals, but more particularly knowledge pertaining to medicine in Hawaii, that all in our profession here and others who may care to read may know what are our problems and what is being done to solve them. There is something about words put down in black and white on paper which crystallize thought and make usable and effective ideas which, conveyed by spoken word, escape from mind and memory all too soon.

The *Journal* should be a medium by which the minds of our conferees may be brought into focus on problems which concern us all — problems having to do with better standards, better practice, better health regulations, better laws. Too much of the thinking for the profession in the past has been done by too few. More enlightenment, more interest, more opinions should improve the quality of our thought, and augment the effectiveness of our influences.

The *Journal* should also be a means through which the effective participation of the profession in community tasks, such as the defense programs, public health education, and communicable disease control, may be improved. In such matters, through lack of information, the efforts of doctors fully willing to put their shoulders to the wheel, have not been fully utilized.

If to the betterment of the profession, and to the betterment of Hawaii, the efforts of the present and future editorial staffs are dedicated, the success of the *Journal* is assured.

September 1941, Vol 1 No 1

## Plantation News

A health plan, as given below, is said to have been submitted to plantation managers a couple of weeks ago accompanied by a covering letter as follows:

"We enclose herewith suggested HSPA Health Cooperation Plan as prepared by Dr Larsen along the lines of his discussion at the last managers' conference, and also suggested Plantation Health Cooperative Plan. We suggest that you give these to your doctor for study, and that you let us have your comments as soon as possible. It is planned to have a further discussion with the HSPA Health Committee in the near future.

"It is quite possible that we may not be able to obtain the services of an experienced man to run such a plan on an HSPA basis. In that event a plan along the line of the Plantation Health Cooperative Plan could be adopted by each plantation."

### A suggested plantation health cooperative plan

#### THE PURPOSE

The purpose of the health cooperative plan is to give adequate and complete health protection to all plantation employ-

ees who are earning more than $100 a month.

It is a private company plan in which the plantation has paid for the overhead costs (doctor's office expense, equipment, instruments, etc) and is trying to give assets in health and protection to its key group of employees at the least possible cost while at the same time protecting the doctor so that he will get a fair remuneration for this group of patients. It must be emphasized that such a plan cannot be compared with a private insurance plan, such as that of the Hawaii Medical Service Association, in which overhead costs must be carried by the individual doctor and put into the charge.

## THE NEED

At the present time the plantation and plantation doctor consider employees earning more than $100 a month as private patients to be charged private rates.

This method has led to several undesirable and unsatisfactory conditions. Some employees who earn $90 a month refuse raises in wages because they know that an income of more than $100 will mean that they will have to pay for all medical attention which was formerly free; many workers do not go to the doctor for the care of minor cuts, injuries, or diseases because of the expense, and later these conditions result in serious complications.

These factors tend to break down the morale and decrease the efficiency of the most important group of workers on the plantation. A cooperative health plan that will take care of these factors is, therefore, essential.

## THE PLAN

Workers shall be divided into groups A, B and C according to income, and shall pay a monthly fee on a sliding scale. The following schedule is suggested:

| | A<br>$101 to $150 | B<br>$151 to $250 | C<br>$251 to $350 |
|---|---|---|---|
| Employee | $1.50 | $1.75 | $2.50 |
| Spouse | 1.10 | 1.30 | 1.95 |
| First Child | .85 | 1.05 | 1.35 |
| Second Child | .65 | .80 | 1.00 |
| Third Child | .50 | .60 | .80 |
| Maximum for family | $5.00 | $6.00 | $8.00 |

It has been found in experimental cooperative health plans at Aiea and Kahuku plantations that these rates are well within the ability of these people to pay, and the income from this amount has been sufficient to pay the doctor, the hospital, and consultation fees.

Payment to doctors for services shall also be fixed on a sliding scale. The charges cannot be compared with those of doctors in private practice ... amounts to from [sic] 30% to 40% of the charge. Hence, it is recommended that at the start of the plan, the fee to the plantation doctor should be the industrial fee schedule, less 30%.

If the patient wishes to go to any other doctor or any other hospital than those on the plantation, the plan would agree to pay the plantation allowance on the other doctor's or hospital's charge. This would operate in the following manner: If the plantation doctor were allowed $50 for an appendicitis operation of a person in Group A and the patient went to a private doctor who charged $75 for the operation and the patient would have to pay the difference. In this way, the patient is allowed free choice of a physician without interfering with the individual fees of any group of doctors.

## POSSIBLE DIFFICULTIES

**Objection to low fee schedule.** The medical societies might object to the schedule because they have opposed all insurance schemes which look like low fee schedules. However, the plantation fees should not be considered competitive fees. They are merely cost allowance to doctor and hospital as a bookkeeping item of a private corporation making a health cooperative plan function. It must not be announced as a fee schedule but as a company allowance which amounts to an actual salary to the doctor, a salary based on the amount of work that he does for these patients. Some have suggested that it be an actual salary, but this does not allow for any psychological drive to stimulate the doctor to give the very best treatment in order to attract clients.

**Free choice of physician.** A second objection of the medical societies would be expressed if free choice of physician were not allowed. They have maintained constantly that any plan that does not allow people the free choice of their doctor has been detrimental to the healthy development of private practice. The plantation doctors have felt that this is a proper objection; and, therefore, free choice of physician should be allowed. However, it has been found by the Hawaii Medical Service Association that free choice led to the greatest and most dangerous abuse because some clients and doctors let the plan carry all the traffic would bear.

## A surgeon's prayer in wartime

God of Battle, grant that the wounded may swiftly arrive at their hospital haven, so that the safeguards of modern surgery may surround them, to the end that their pain is assuaged and their broken bodies are mended.

Grant me as a surgeon, gentle skill and intelligent foresight to bar the path to such sordid enemies as shock, hemorrhage and infection.

Give me plentifully the blood of their non-combatant fellow man, so that their vital fluid may be replaced and thus make all the donor people realize that they, too, have given their life's blood in a noble cause.

Give me the instruments of my calling so that my work may be swift and accurate; but provide me with resourceful ingenuity so that I may do without bounteous supplies.

Strengthen my hand, endow me with valiant energy to go on through day and night; and keep my heart and brain attuned to duty and great opportunity.

Let me never forget that a life or a limb is in my keeping and do not let my judgment falter.

Enable me to give renewed courage and hope to the living and comfort to the dying.

Let me never forget that in the battles to be won, I too must play my part, to the glory of a great calling and as a follower of the Great Physician.

Amen.

Christmas Night, 1941
John J Moorhead Col MC

*(Continued)* ➤

# The decade of the forties (continued)

The third issue was published in January 1942 and was sold for 50 cents an issue because of its size. It was the beginning of many articles published in the 1940s on the treatment of wartime casualties. Before it could be published, however, permission from the military had to be obtained, and it was (see page 185, EDITORIALS that follows).

The issue is also notable for other reasons: We reproduce the face sheet of the issue, a striking artifact in its own right with its index of authors. Military medicine consumes the thinking of the day and please note the original "Remember Pearl Harbor" at the bottom of the page.

We reproduce next pages 141 and 142 of Principles of Traumatic Surgery as delivered by visiting surgeon John Moorhead MD in Mabel Smyth auditorium the few days preceding the attack on Pearl Harbor and actually also on the morning of December 7. The assembled physicians were instantly dispersed to practice what they had been listening to: The care of trauma patients.

The medical battle plan had been thoroughly worked out in advance by Robert Faus MD and the Hawaii physicians each knew where to go and take up their duties.

The business manager of the *Journal*, Elizabeth D Bolles, recalled that fateful day in writing her editorial, "War Came to Hawaii" on pages 139 and 140 in which she describes the events that took place. We reproduce those 2 pages as well as Dr Moorhead's prayer on Christmas night in December 1941 on page 157: A SURGEON'S PRAYER IN WARTIME (see page 309).

Now, it is 50 years later and physicians again have been called to a distant land on the other side of the world to work in the most modern of field hospitals equipped with technology that would never pass Hawaii's CON — certificate of need — process. Fortunately, the casualties on our side of Desert Storm were few, the deployment and state of readiness outstanding and physicians stood by, as always, to render care and comfort as needed.

(As an irresistible aside, and bringing the past into the present, the early issues of the *Journal* featured large ads by Philip Morris Tobacco Company emphasizing the scientific proof that smoking that brand of cigarettes was healthful. This is cited here in relation to the recent campaign by HMA to discredit Philip Morris Company's using the Bill of Rights as an advertisement for the freedom to smoke. It was some time ago that the *Journal* proscribed all cigarette ads!)

Becky Kendro
HMA Assistant Executive Director,
Community Affairs

**EDITORIALS**
January 1942, Vol 1 No 3, page 185

# Publication authorized

The delay in the publication of this issue of the Journal is due in part to the pressure of activity following the events of December 7th which delayed the preparation of material by the authors and in part to the necessity for securing permission from the office of the Military Governor for continuance of publication. That permission was finally received on January 15th, and is quoted for the record:

HEADQUARTERS HAWAIIAN DEPARTMENT
OFFICE FOR THE ASSISTANT CHIEF OF STAFF
FOR MILITARY INTELLIGENCE
FORT SHAFTER, TH

15 January 1942

Mrs Elizabeth D Bolles
Secretary & Business Manager
Hawaii Medical Journal
510 South Beretania Street
Honolulu, TH

Dear Mrs Bolles:

This is formal authorization for your continuance of the publication of the Hawaii Medical Journal. One copy of each edition should be sent to the Public Relations section of this office. In case of material of a doubtful nature, your editor should consult with the head of the Public Relations section.

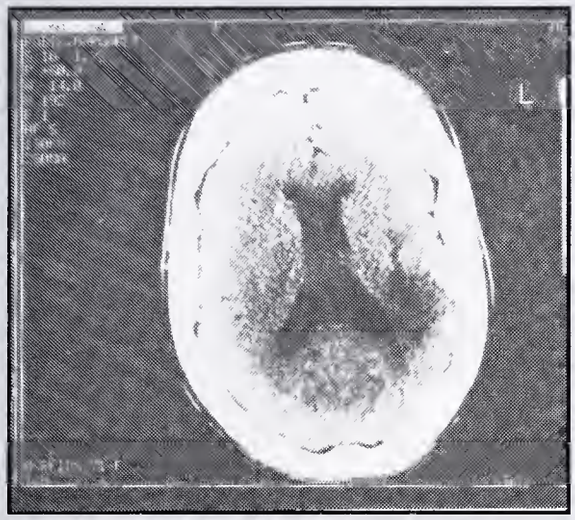
Very truly yours,
KENDALL J. FIELDER,
Colonel, GSC.

*(Continued on page 312)* ➤

# Nuclear Medicine Teaching File

## Technetium HMPAO SPECT Brain Imaging

Tc-HMPAO crosses the intact blood-brain barrier and is incorporated into metabolically active brain cells in proportion to blood flow. Brain imaging with Tc-HMPAO can demonstrate cerebral infarction immediately after the acute event, well before CT changes are evident.




1. CT study in this 71 year old female shows a small infarct of indeterminate age in the left parietal lobe.




2. HMPAOP
O scan on the same day shows a large right middle cerebral artery infarct (large arrow) in addition to the left parietal lobe infarct small arrow).




3. Transaxial view showing an infarct of the right frontal lobe and right basal ganglia in this 70 year old female with left sided weakness and confusion.




4. Coronal view in the same patient.

*Nuclear Medicine — Non-invasive, physiologic imaging*

**PACIFIC RADIOPHARMACY, LTD.**

*A JOINT VENTURE OF*
*QUEEN'S MEDICAL CENTER, KUAKINI, SAINT FRANCIS,*
*STRAUB AND THE HONOLULU MEDICAL GROUP.*

January 1942, Vol 1 No 3, pages 141 and 142

# Principles of traumatic surgery

*Notes on post graduate lecture series given by John J Moorhead MD, Professor of Clinical Surgery, NY Post Graduate Medical School, Columbia University (Ret)*

## Traumatic surgery

December 4, 1941

Traumatic surgery is part, and a very large part, of general surgery. It has no selective action and may involve several parts at the same time. I shall speak of certain outstanding symptoms and methods of treatment in common injuries.

A very good starting point is that very difficult and important hand infection group. Next to the eye, the hand is of greatest importance. It is my belief that infection of the hand is treated more poorly than any other type of traumatic surgery.

Any break in the skin should never be disregarded. There is no such thing as a clean accidental wound. Every wound that is not made with surgical intent is already infected and should be so regarded. Our problem then is the treatment of infected wounds.

### Golden period

What are the essential things in regard to repair and recovery? What are the determining elements? Is it the source — a razor, a piece of glass, a nail? All these play a part, but the time element intervening between receipt of the injury and the time of institution of adequate treatment is probably the most important thing. There is in traumatic surgery what I call the "Golden Period" — the first 6 hours elapsing between the injury and the institution of care. I was a general surgeon before I became a bone setter, and I know what happened after going more than 6 hours with a ruptured appendix or duodenal ulcer. If I got in before, then most of them got well; after that most of them died. Before 6 hours, I was treating the rupture; after 6 hours I was treating the peritonitis.

Suppose before you get the case, somebody has done something else for it. That brings up the first aid situation. I wish they did not do anything. They think that if they put in something very nicely colored, that is enough. Those antiseptics are very colorful, but to use them is not good traumatic surgery — it is chromatic surgery.

### Cleansing

There are only 2 ways of treating a wound; only 2 ways to clean a wound — mechanical sterilization and chemical sterilization. Mechanical is by debridement and chemical is by drugs. If a patient is seen by us within the first 6 hours, we give one type of treatment; if after 6 hours, another type of treatment. We are not going to do anything to an already infected wound that we do to a non-infected wound. If we go into infected territory and do what we would like to do to a non-infected wound, we will spread the infection.

First of all, within the first 6 hours, we cleanse. With what? Soap and water. What next? More soap and water. What next? More soap and water. Rub it gently, but don't scrub. If it is a ragged wound and the edges are brown, we debride them. What does debridement mean? To remove the debris? No. It is a French word and it means unbridling. It means to sparingly excise all the damaged tissue. Organisms cannot live on anything healthy, they die. We excise until 3 criteria are attained: (a) it bleeds; (b) it looks healthy; (c) if it is muscle, it contracts. In some cases, it may mean 1/32 of an inch, it may be half an inch, but we do it until those 3 criteria are fulfilled. Then we stop the hemorrhage.

### Sutures

Shall we do primary suture? I am going to be very radical and say don't sew anything that requires debridement. Put in your sutures of some non-absorbable material, place a dressing over it, and don't tie those sutures until the end of the third day. That is a primo-secondary suture. At the end of the third day, take the dressing off, bring the sutures together and you will be surprised to find how nearly you have attained perfect coaptation.

I think an excellent dressing is sulfanilamide, 15 grains to the ounce, in mineral oil or sterile vaseline as a wet dressing. Use a large dressing to immobilize the injury and keep it quiet. Hand cases should be well splinted because motion has

### THE TEN COMMANDMENTS OF TRAUMATIC SURGERY

I. Thou shalt have no god of trauma other than the welfare of thy patient.

II. Thou shalt not bow down to any graven image except knowledge and experience.

III. Thou shalt not take in vain the names of those who diligently seek the welfare of thy patient.

IV. Remember to give thy patient rest on the days following surgery.

V. Honour the parents of traumatic surgeons who gave birth to and practiced the branch of general surgery.

VI. Thou shalt not kill thy patient by neglect nor by the practice of alien doctrines.

VII. Thou shalt not commit adultery by condoning clinic crimes designed to conceal such offspring as infection, deformity and disability.

VIII. Thou shalt not steal the ideas of thy brother practitioners without due recognition.

IX. Thou shalt not bear false witness against thy brother practitioners who proudly did as you would have done.

X. Thou shalt not covet thy fellow practitioner's skill, his equipment, his hospitality, anything else that is his, except his reputation, his knowledge and his experience.

a capacity to cause infection to spread. The kind of splint does not matter.

**Infected wounds**

I am a great believer in hot wet dressings in an infected wound. I like a saturated solution of mag sulph, several layers of gauze, with the solution dripping through. Use an electric light to keep it hot. I use it until I get indications for incision and drainage. Don't cut except for one of these 3 if you would not metastasize your infection: (a) localized fluctuation; (b) localized tenderness; (c) localized induration. When you cut, cut until the wound is gaping; ordinarily that means going through the fascia. For drainage, use the end of a rubber glove, or an ordinary pipe cleaner. Use gauze only in 2 places (a) to stop hemorrhage and (b) to keep wound edges apart. And if you have to use gauze, oil it with vaseline or mineral oil.

**Follow through**

The follow through is more important often than anything except the initial treatment. Function is the end in view. Let us start reasonable motion early. Don't put the hand into a hyperextended, hyperflexed position. Put it in a position of ease, ordinarily that is in a partially flexed position in any and every joint. To promote function have the individual try to make motions almost from the beginning. Get the bad side to imitate the good side. Physiotherapy is regarded as a sovereign method in helping to restore function. I am a great believer in physiotherapy if the person who is directing the treatment does the physiotherapy. Long wave, short wave, diathermy, all have their place, but my reliance mainly is on what I can get the patient himself to do.

**Summary**

Traumatic surgery is emergency surgery and the fundamental thing is "to do it now." The 6-hour period is the Golden Period. If we can take care of our wounds during that time we are very much less likely to get infections. After the 6-hour period there is a different type of treatment because the situation is different. Let us debride our wounds; let us use the sulfa drug on the outside as well as internally; but do not regard them as substitutes for the ordinary surgery asepsis of years back. In the infected cases, sulfa drugs are invaluable, but don't rely on sulfa drugs to carry you through; the sulfa drugs won't do it without giving the wound ordinary cleansing; and don't forget that the sulfa drugs are specific for infections of the erysipelas type and other cellulitis. Do not sew up a debrided case, and above all, do not sew it up in a compound fracture. In infections there are 3 indications for incision: local fluctuation, localized tenderness and local induration. Never for brawny induration; never for adenitis.

**EDITORIAL** — January 1942, Vol 1 No 3, pages 139 and 140

# War came to Hawaii

Elizabeth D Bolles

And how did it find us?

Providence could not have been kinder to the boys who had their baptism of fire on that morning of surprise, than by having in Honolulu Dr John J Moorhead, veteran of the last world war, and authority on traumatic surgery.

Only 3 days prior to the 7th, Dr Moorhead arrived to give to the doctors of the islands an intensive postgraduate course in the handling of war injuries. And on the fateful Sunday morning a crowded hall of doctors awaited his lecture on burns. For 3 sessions he had drummed into a record audience of 300 civilian, army and navy doctors the several cardinal points of procedure in the handling of wounds. And they certainly were applied that day, Sunday the 7th, not alone by the Army and Navy surgeons but by the 20-odd civilian surgeons and physicians who all that day and night assisted their military colleagues in caring for the many casualties brought to the hospital. No need for the surgeons to hesitate in the face of the ugly, extensive wounds that came into their hands. Dr Moorhead had told them what to do, simply and with the authority of a man of experience. And he went as eagerly as did the civilian doctors when the call that interrupted and temporarily terminated the lectures came from Headquarters.

And more important, Dr Moorhead and his pupils had the keen satisfaction of seeing the results of their work. Only 22 cases of gas gangrene (all of which recovered) and "not a teaspoonful of pus — not a serious infection" was what he reported weeks later, just before his departure. What greater reward could any physician ask!

Said Dr Moorhead in his farewell to the physi-

> *"I was greatly pleased to see what a fine job the medical profession of Honolulu did in the recent emergency. The aid which it gave to the military forces of the Island will always be a brilliant chapter in the history of medicine in our country. Dr Arnold and Dr Pinkerton deserve the highest praise, so too do the many civilian surgeons who so splendidly gave of their efforts. The very low mortality was in part due to their cooperation. No one will ever doubt the value of the sulfonamides and of plasma in the treatment of war casualties. The experience has been of enormous help in planning for the future. Greetings to my friends."*
>
> Dr I S Ravdin
> Philadelphia

*(Continued)* ➤

cians on December 30th:

"Honolulu has been the proving ground for the technique of handling war wounds. I shall recommend that this technique be adopted universally throughout the country."

And what he said further is also recorded, not with the idea of glorying in self-praise, but that it becomes a matter of record:

"The United States of America owes you, the civilian doctors of Honolulu, a debt of gratitude for the work you did on December 7th, and I shall make it known in high places what you did here."

In inviting Dr Moorhead to come to Hawaii, our Post-Graduate Committee by design had in mind to prepare the civilian doctors particularly against just such an indent as occurred, but it had no idea that the knowledge and guidance it sought would be so quickly applied. Every physician, Army, Navy and civilian, can be thankful to that committee for its forethought and its choice of the man.

This story would not be complete if attention were not directed to the swift and competent mobilization of the ambulance service and first aid units under the direction of Dr HL Arnold Sr and Dr Robert B Faus, acting for the Honolulu County Medical Society's Preparedness Committee, and the work of the blood bank under the direction of Dr F J Pinkerton and Dr John Devereux. Within an hour, 18 first aid units went into action, and the Preparedness Committee had 100 trucks rolling within an hour, some immediately, to the scene of combat at Hickam Field and Pearl Harbor for the transportation of casualties to the Army Hospital. Many comments were heard about their capable performance and days later there was still great speculation as to who had dispatched them. Only 4 of the 18 first aid stations took care of casualties, but all of them were manned and ready for action. One — at Lunalilo School — was actually bombed, but promptly rallied and reestablished itself nearby.

The meager supply of 200 flasks of plasma in readiness was immediately dispatched to the Army, Navy and civilian hospitals and a feverish activity was begun to augment that supply.

Forever be it said for the civilian population of Honolulu, that it responded as one man to the needs of the day. It took some time for the transition to take place in the minds of all of us that this was not a maneuver, that the Japanese had actually arrived — an utterly inconceivable reality. It took some time to convince most of us that the smoke arising from Pearl Harbor and Hickam Field was not a burning cane field or a burning oil tank, or a bit of chemical reality added to routine maneuvers; and many of us watched and commented on the maneuvers as the puffs of smoke in the sky. Not one credited the first reports that it was an attack, but when the truth was brought home there was no hesitancy or panic. Radio orders and instructions were carefully followed out and orderliness reigned throughout.

That word *orderliness* cannot in honesty be applied to the weeks that followed in an attempt to get things organized. However, organization has been shaken down finally and there is evidence of planning coming to the top.

— EDB



Dr Moorhead (seated, left center), Mrs Moorhead (standing, center), and members of the Honolulu County Medical Society, following presentation of a commemorative plaque by Dr James R Judd.

## The decade of the fifties in the *Journal*

The article entitled, "The Surgical Treatment of Patent Ductus Arteriosus" (Vol 14, No 5 May-June 1955) reported the first attempt in Hawaii to treat congenital heart disease; it was a prelude to the routine use of cardiopulmonary bypass and operations on the coronary arteries. These valuable procedures are now available in at least 4 Honolulu hospitals. This was the high point of the 1950s.

The extreme presentation of a patent ductus arteriosus, the aortic-pulmonary window, requires cardiopulmonary bypass for safe repair. Dr John Gibbon had successfully utilized cardiopulmonary bypass to correct an atrial septal defect in 1953. (Gibbon JH Jr: Application of a mechanical heart and lung apparatus to cardiac surgery, Minnesota Med 37:171-185, 1954.) Wide application of the technique required advances in the technical aspects of the surgery, eg, perfusion apparatus and mechanical valves.

The *Hawaii Medical Journal* recognized the significance of the start of this type of surgery by publishing this report of the surgical procedure which was made safer because of the availability of the Potts clamp.

Nathaniel Ching MD
Honolulu

**Addendum:**

However, the HMA House of Delegates voted to purchase a full page ad in the Statehood edition of the *Honolulu Advertiser*. [Interestingly, there seems to have been nothing spectacular written in the 1950s in the *Journal* that had any reference to Hawaii becoming the 50th State in August of 1959, not long after Alaska became the 49th/Ed.]

*. . . report of 14 consecutive cases*

# The surgical treatment of patent ductus arteriosus

C M Burgess MD
G C Freeman MD
J W Cherry MD
A S Hartwell MD

The surgical treatment of the patent ductus has been developed and technically perfected in the past 15 years. The safety of the operation, when properly carried out by those familiar with the conditions found, is so well established that no one over 4 years of age and under 30 should be denied the unquestioned benefit of having the shunt closed. Recent developments in technique, notably the use of the Potts-Smith-Gibson clamp, as advocated by Conklin and Watkins[1], make many authorities feel that any patent ductus at any age should be closed, even in the absence of symptoms of cardiac embarrassment.

From the Departments of Surgery and Internal Medicine, Straub Clinic, 1020 Kapiolani Street, Honolulu.

Received for publication February 21, 1955.

Although reports have been published by Fishman and Silverthorn[2] of 2 individuals living to 73 and 75 years with a patent ductus, the fact remains that these patients finally died as a direct result of the presence of the lesion. Certainly the adult who has cardiac embarrassment from the presence of the ductus faces a markedly decreased life span unless something is done. It is believed by the authors that careful technique and the use of the Potts-Smith-Gibson clamp will allow the operation to be performed with a mortality no greater than that of any major-risk procedure. This risk should be only a fraction of that accompanying the untreated condition itself. One must not forget the constant threat of bacterial endarteritis, which of course ends the lives of many patients with this anomaly. When we realized that the cardiovascular system can be restored to normal by division of the ductus, the indications for conservative treatment must be carefully scrutinized.

*(Continued)* ➤

### Differential diagnosis

The diagnosis of patent ductus arteriosus can be made with considerable accuracy on the basis of history, physical examination and fluoroscopic and electrocardiographic determinations in persons over the age of 4 years. The typical continuous roaring murmur with systolic accentuation in the second and third left interspaces, accompanied by systolic thrill, is nearly always present. At times, the diastolic element may be difficult to hear; and in children under the age of 3 there may be a very faint murmur, or no murmur at all.

Certain conditions must be borne in mind when the above-described murmur is heard. A venous hum near the left clavicle may be confusing, but compression of the neck veins should largely obliterate this sound. An arteriovenous fistula in the mediastinum or pulmonary tissues, where there is a left-to-right shunt and therefore no cyanosis, may cause difficulties; but this condition is quite rare. Occasionally rheumatic aortic insufficiency and stenosis may have a murmur simulating a patent ductus, and of course an aortic septal defect may be indistinguishable clinically even after cardiac catheterization. Interatrial septal defect may at times also be confused with a patent ductus.

The presence of cyanosis or hyperhemoglobinemia, in the absence of dehydration, should make one hesitate to make a diagnosis of pure patent ductus.

Fluoroscopic examination, with a swallow of barium to determine the course of the esophagus, is extremely valuable. The presence of a prominent pulmonary conus, with some hilar congestion and a slightly prominent left ventricle, is very helpful, as is the finding of a widened pulse pressure. We feel that the vast majority of pure patent ductus arteriosus can be diagnosed accurately with the procedures outlined above, and that cardiac catheterization is not necessary.

### Treatment

According to Taussig[3], the ideal age for operation is between 4 and 6 years. Prior to the age of 4, the diagnosis simply cannot be made with any degree of certainty. Surgery is technically easier, and is carried out with a lower mortality, during the early years of childhood.

The anesthetic used on these 14 patients was intratracheal oxygen-ether, preceded by pentothal induction in the adults. This was satisfactory in all cases, and we agree with most writers that it is the anesthetic of choice. Gross[4] has given up cyclopropane as being too prone to cause cardiac arrhythmias and arrest.

These cases have all been treated in much the same way as far as the actual technique of surgery is concerned. A curved incision was made underneath the left breast, cutting the pectoral muscles and reflecting the breast and these muscles upward. Often it had to be carried below the tip of the scapula to give adequate exposure for the application of the Potts-Smith-Gibson clamp, which was used routinely on all but the first 2 patients. The approach in all the children was through the bed of the third rib; in adults, the fourth rib was removed. They were all placed in the anterolateral position; that is, approximately 45 degrees from the vertical on the table. This was felt advantageous because it allowed maximum function of the usually compressed right lung.

After injection of the vagus nerve with 1% novocaine, an incision was made overlying the aorta and the nerve with its recurrent branch visualized and retreated. Care was used not to involve the phrenic nerve in the incision or in the retraction sutures.

Adequate mobilization of the aorta is necessary so that the Potts-Smith-Gibson clamp can be applied. In order to do this, it was always necessary to ligate one and occasionally as many as 3 of the upper intercostal vessels. However, this dissection was never difficult, and as mobilization of the aorta proceeded, it was remarkable how it facilitated the dissection of the ductus, especially in its posterior portion where it tends to be adherent to the bronchus.

The near disaster that followed excessive hemorrhage in the second case has convinced us that the use of the Potts-Smith-Gibson clamp is invaluable insurance which the operator should never be without, especially on adults with attenuated and dilated aortic walls. In each case, the patent ductus was ligated and divided in the manner described by Conklin and Watkins.

The use of the clamp to occlude the ductus, while the general condition of the patient is observed to rule out any other congenital lesion, is of great value. Five or 6 minutes, while the lungs are being re-expanded, are allowed for this procedure.

A thoracotomy tube, consisting of a large Foley catheter, was routinely placed in the dependent portion of the chest prior to closing the incision. This was attached to a water seal.

Postoperatively, these patients have had no significant complications. One patient developed a subcutaneous hematoma in the incision; none of them developed pleural effusion that persisted beyond the first week; and none required aspiration. The early cases were all placed in an oxygen tent following surgery, but in the latter ones, this extensive procedure was found to be unnecessary.

### Case report

Mrs EO, a 32-year-old Japanese woman, was operated upon on January 9, 1953, for a patent ductus with marked cardiac enlargement. When the area of the ductus was exposed, a pronounced dilatation of the aorta distal to the shunt was noted. During the dissection to free the ductus, a rent occurred in the dilated portion of the aorta behind and immediately adjacent to the ductus and an exsanguinating hemorrhage resulted with cardiac arrest.

The aorta was clamped distal to the left subclavian artery; cardiac massage was immediately started and rapid replacement of blood was carried out. Mobilizing and rotating the aorta caused the tear to extend further, but no further bleeding occurred, because of the proximal clamp. The rent on the posterior wall, as well as the aortic opening of the ductus, was closed with vascular sutures and the pulmonary end of the ductus was ligated.

While the ductal openings and the aortic tear were being repaired, effective blood pressure was maintained by massage of the heart. There was no contraction of the myocardium for a period of 45 minutes, but after that time a few feeble contractions were noted, and myocardial tone returned. At the end of 1 hour and 15 minutes, a regular cardiac rate of 100 was

established, with forceful, vigorous pulsations.

In spite of the long period of arrest, no cerebral damage resulted. The patient regained consciousness a few hours after surgery, was oriented, and recognized members of the family as well as her physicians. Though one would expect serious sequelae from the 1 hour and 15 minutes during which the kidneys were deprived of their blood supply, the patient passed 1700 cc of urine in the first 24 hours and she was able to concentrate satisfactorily. Almost complete flacid paralysis of both lower extremities lasted about 3 weeks, after which time strength and active control of the legs slowly returned.

Since the operation 2 years ago, the patient has had no cerebral sequelae from her cardiac arrest, but she has not completely regained the use of all muscle groups in the lower extremities. She is able to walk without assistance, but with an alteration of her gait and rather marked atrophy of her calves, and the legs tire readily.

## Discussion

Table 1 gives pertinent data regarding the 15 patients we have operated upon for patent ductus arteriosus. The first 14 revealed the typical operative findings, and the ductus was successfully divided and closed. The pulmonary artery side was ligated and usually transfixed; in all cases the aortic defect was closed with 2 rows of continuous suture reinforced with interrupted sutures where needed. The last case, TI, was operated upon with a preoperative diagnosis of probable patent ductus arteriosus, though there was some doubt, due to the atypical character of the murmur. The finding of an aortic septal defect was not unexpected, therefore, and this diagnosis could not have been made in any other way with any degree of certainty.

The table shows that of the 14 successful cases, 7 were 6 years of age or younger. The remaining 7 ranged from 11 to 34 years of age. As in most series, there was a preponderance of females over males of 11 to 3. The series is too small to permit any conclusions regarding the racial incidence of the disease, but it is interesting to note that 5 of the patients were Japanese, 4 Filipino, 3 part-Hawaiian, and only 1 Caucasian. Symptoms were either absent or minimal, only the 3 oldest patients showing significant restriction of activity by dyspnea on exertion. Three of the young children showed significant retardation of development.

The physical findings were not unusual in most cases. All but 4 cases had the classical murmur. All patients had an increased pulse pressure. Some degree of cardiac enlargement was present in all but 3 of the patients and was progressive in the 2 youngest, CA and DU, who were operated upon as semi-

**Table 1 — 15 consecutive cases operated upon for persistent patent ductus arteriosus by the authors, with relevant signs and symptoms and results obtained.**

| | Case | Age | Sex | Racial Extraction | Symptoms | Murmur | BP | Cardiac Enlargement | Post-Op Result |
|---|---|---|---|---|---|---|---|---|---|
| 1. | GH | 4 | F | Japanese | None | Classical | 100/60 | Slight | No murmur |
| 2. | CA | 3 | F | Part Hawn | Retarded development | Classical | 100/0 | Progressive gallop rhythm | No murmur |
| 3. | YA | 11 | F | Filipino | None | Classical | 100/40 | Moderate | No murmur |
| 4. | CP | 5 | F | Filipino | None | Classical | 100/40 | Moderate | No murmur |
| 5. | DN | 6 | M | Part Hawn | Asthma | Classical | 90/25 | Slight | No murmur |
| 6. | SS | 5 | F | Japanese | Retarded development | Pulmonary systolic & diastolic | 110/60 | None | No murmur |
| 7. | DU | 2-1/2 | M | Filipino | Retarded development | Classical | 110/40 | Progressive | No murmur |
| 8. | BJV | 6 | F | Caucasian | None | Pulmonary systolic grade III faint diastolic | 100/40 | Slight | Grade II pulmonary systolic murmur |
| 9. | PA | 12 | F | Part Hawn | None | Classical | 90/30 | Moderate | No murmur |
| 10. | RA | 17 | F | Japanese | Asthma | Classical | 110/60 | Moderate | No murmur |
| 11. | AR | 20 | M | Filipino | None | Pulmonary systolic w/thrill | 100/50 | None | No murmur |
| 12. | EO | 24 | F | Japanese | Dyspnea on exertion | Classical | 105/10 | Progressive | Grade I pulmonary systolic murmur |
| 13. | EO | 32 | F | Japanese | Dyspnea on exertion | Classical | 105/10 | Progressive | Pulmonary grade I systolic murmur |
| 14. | HY | 34 | F | Chinese | Dyspnea on | Classical | 110/50 | Moderate | No murmur |
| 15. | GI | 25 | M | Japanese | Decompensation | Continuous roaring murmur | 100/0 | Progressive | Same as before exploration |

*(Continued)* ➤

emergencies because of this. No murmurs were audible after surgery in 11 of the 14 successful cases. Three showed a pulmonary systolic murmur of Grade I or II intensity but in none was there a diastolic murmur present.

In these first 14 cases there were no deaths, and no postoperative complications with the exception of EO whose detailed case history has been given. The last case, GI, whose septal defect was not amenable to correction, has a guarded prognosis. One patient, DU, age 2-1/2 years, was found to have a coarctation of the aorta of moderate degree in addition to the patent ductus arteriosus. There was no evidence of impairment of the circulation by the coarctation and no attempt was made to correct it. It is possible that such will be necessary at a later date.

**Summary**

Fourteen cases of patent ductus arteriosus operated upon without a fatality have been presented. All were treated by ligation and division of the ductus.

The importance of the safety factor provided by the Potts-Smith-Gibson clamp has been discussed.

A detailed case report of one patient whose operation was complicated by excessive hemorrhage is given in detail. No cerebral or renal damage followed a prolonged period of cardiac massage and only slight permanent cord damage resulted from complete occlusion of the aorta for over 1 hour.

**Addendum**

Since the paper went to press 2 more cases have been successfully operated upon: a 16-year-old Filipino girl with an enlarged heart and a short ductus (2 cm), and a 4-year-old part-Hawaiian boy with a small ductus.

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2. Fishman L and Silverthorne CM: Persistent Patent Ductus in the Aged, *Am Heart J* 41:762 May 1951.
3. Taussig HB: Clinical Progress, Diagnosis and Management of Common Malformations of the Heart, *Circulation* 6:930 Dec 1952.
4. Gross RE and Longino LA: The Patent Ductus Arteriosus, *Circulation* 3:125 Jan 1951.

**RESOLUTION NO. 6**
**Re: ADVERTISER IN STATEHOOD EDITION**

WHEREAS, Public relations for organized medicine can stand all the help it can get, and

WHEREAS, The Statehood Edition of the *Honolulu Advertiser* will contain a special section devoted to medicine and allied professions, which will reflect great credit upon organized medicine in Hawaii and will be distributed widely as permanent record in libraries and so forth, and

WHEREAS, Advertising support which is required to finance this publication has not been forthcoming from national pharmaceutical firms and others in anything like the expected amount, and

WHEREAS, The occasional purchase of advertising space in newspapers is basic to the maintenance of good press relations, and organized medicine has few opportunities to do this; therefore be it

RESOLVED, That the Hawaii Medical Association purchase a full page of advertising in the Statehood Edition of the Honolulu Advertiser.

*Resolution No. 6:*

Your reference committee recommends adoption of this resolution.

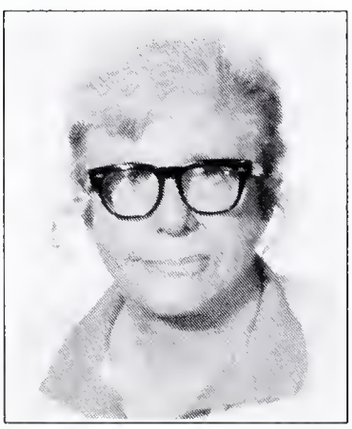
**ACTION:**

The Chairman moved adoption of this portion of the report.

Dr Nishijima asked how much such an advertisement would cost and was advised it would be in the neighborhood of $900. Dr Arnold was asked to speak on this subject. He said we had spent a lot of money for public relations but we had spent very little in the past few years. This isn't very much money as far as public relations goes, and he felt that it would be money well spent. We have very good relations with the "Advertiser." The medical profession spends very little money outside the subscription price and in spite of this, the newspaper has always been most cooperative and this was one way we could repay them.

The report was adopted.

## A few of the editors that contributed to the *Journal* . . .



**Lee McCaslin**
**Managing editor**
**1956-70**



**Doris Jasinsky MD**
**Assistant editor 1974-80**
**Managing editor 1980-85**



**Henry N. Yokoyama MD**
**News and Notes editor**
**1964 to present**

## The decade of the sixties in the *Journal*

Those were tumultuous times for the practice of medicine !

The original paper, "The Relative Value Studies: Fixed conversion vs. customary fees" was written 25 years ago in Vol 26, No 2 November-December 1966.. The reasons for the changes in the practice of medicine are well spelled out in the article.

The changes that have occurred since then were largely predicted by this article. HMOs and PPOs have proliferated. Medicare is about to impose a relative value scale of payments. HMSA is set to follow with a payment schedule modeled on that of Medicare.

Medicine is changing, in large part, because of its high cost. It now represents about 12% of the GNP. Yet many of the causes of health-care cost escalation are not within the physician's control. Paperwork needed to fill out forms and to prove compliance has increased. Staff shortages in the healthcare field have caused salary escalations. The legal system is increasing costs by causing defensive medicine. Families still want "everything possible" done for their sick or dying relatives "regardless of the cost." Changing technology allows much to be done for an individual patient, but the cost can be very high.

No one can really predict exactly what the practice of medicine will be like 25 years from now. Ultimately, it is society that determines what it expects from medicine and how much it is willing to pay.

Allen Strasberger MD
Honolulu

*. . . a long-time employee of the California Medical Association foresees tumultuous times for the practice of medicine*

# The Relative Value Studies: Fixed conversion vs. customary fees

Robert L. Thomas

*Health care legislation, technological advances, increases in biological knowledge, better health and increasing longevity of people, changing patterns of professional activity, and changes in the structure and function of medical institutions are among the factors involved in the changes occurring in the character of the practice of medicine.*

As the effectiveness of medicine increases, medical care is being considered by many people more and more to be a basic right of everyone and the concept of "separate but equal" is recognized as unsound.

The effectiveness and economy of medical services, both in manpower and in costs, are increasingly recognized as a concern of the *public*, as well as of the physician and the patient.

Associate Director
California Medical Association
693 Sutter Street
San Francisco, CA 94102

Read before the Western Conference of Foundations for Medical Care, Honolulu, June 21, 1966.

**Government regulations**

Within the framework of federal and state health care legislation passed in the last 2 years, government has *generally* left "the delivery of medical care" alone. PL 89-239, the Heart Disease, Cancer and Stroke legislation, promises to accomplish its ends "without interfering with the patterns, or the methods of financing of patient care or of professional practice, or with the administration of hospitals." PL 89-97, the Medicare Law, goes a step further by promising that no federal official shall be permitted "to exercise any supervision or control over the practice of medicine or the manner in which the services are provided."

These are fine, well-intended phrases; but what about impact, regulations, corresponding changes in attitudes and direction ?

Permit me to quote from an April 18, 1966, memorandum prepared by the Surgeon General of the United States Public Health Service to the Secretary of the Department of Health,

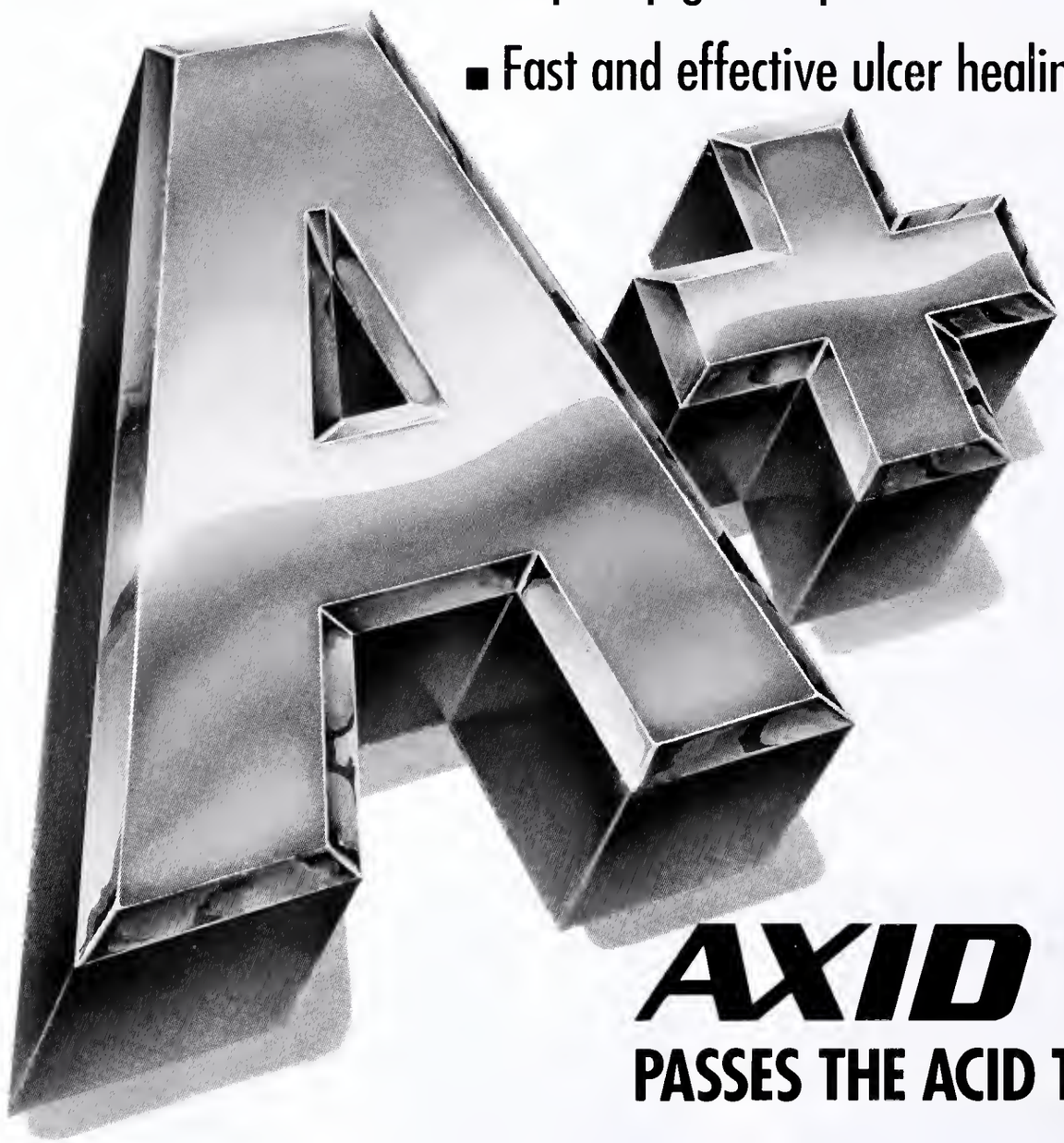
*(Continued)* ➤

# For excellent response in the treatment of duodenal ulcers...

# AXID® nizatidine

# has the right answers

- Rapid epigastric pain relief[1,2*]
- Fast and effective ulcer healing[2,3,4]



## AXID PASSES THE ACID TEST

*Most patients experience pain relief with the first dose.

*See adjacent page for references and brief summary of prescribing information.*

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**AXID** ® (nizatidine capsules)

**Brief Summary Consult the package insert for complete prescribing information.**
**Indications and Usage**: 1. *Active duodenal ulcer* – for up to 8 weeks of treatment. Most patients heal within 4 weeks.

2. *Maintenance therapy* – for healed duodenal ulcer patients at a reduced dosage of 150 mg h.s. The consequences of therapy with Axid for longer than 1 year are not known.

**Contraindications**: Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, $H_2$-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other $H_2$-receptor antagonists.

**Precautions**: *General* – 1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

*Laboratory Tests* – False-positive tests for urobilinogen with Multistix® may occur during therapy.

*Drug Interactions* – No interactions have been observed with theophylline, chlordiazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system; therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

*Carcinogenesis, Mutagenesis, Impairment of Fertility* – A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

*Pregnancy – Teratogenic Effects – Pregnancy Category C* – Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect; but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

*Nursing Mothers* – Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

*Pediatric Use* – Safety and effectiveness in children have not been established.

*Use in Elderly Patients* – Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions**: Clinical trials of varying durations included almost 5,000 patients. Among the more common adverse events in domestic placebo-controlled trials of over 1,900 nizatidine patients and over 1,300 on placebo, sweating (1% vs 0.2%), urticaria (0.5% vs <0.01%), and somnolence (2.4% vs 1.3%) were significantly more common with nizatidine. It was not possible to determine whether a variety of less common events were due to the drug.

*Hepatic* – Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

*Cardiovascular* – In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

*CNS* – Rare cases of reversible mental confusion have been reported.

*Endocrine* – Clinical pharmacology studies and controlled clinical trials showed no evidence of antiandrogenic activity due to nizatidine. Impotence and decreased libido were reported with equal frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

*Hematologic* – Fatal thrombocytopenia was reported in a patient treated with nizatidine and another $H_2$-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

*Integumental* – Sweating and urticaria were reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

*Hypersensitivity* – As with other $H_2$-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

*Other* – Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage**: Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. Renal dialysis does not substantially increase clearance of nizatidine due to its large volume of distribution.

PV 2091 AMP
[091190]

**References**
1. Data on file, Lilly Research Laboratories.
2. *Scand J Gastroenterol.* 1987;22(suppl 136):61-70.
3. *Scand J Gastroenterol.* 1987;22(suppl 136):47-55.
4. *Am J Gastroenterol.* 1989;84:769-774.

NZ-2943-B-149347

*Additional information available to the profession on request.*

Lilly

**Eli Lilly and Company**
Indianapolis, Indiana
46285

Education and Welfare; the subject: "Reorganization of the Public Health Service:"

> . . . . . I feel that the time is now ripe for a definitive statement of our aims and the organizational structure which will, in my judgment, serve them best. This memorandum is designed to constitute such a statement.
>
> My fundamental thesis is that the health of the American people, *in its totality*, shall be the overriding concern of the Public Health Service and the measure of our success or failure. Our ultimate commitment is not to agencies or institutions, but to people. In this context the Surgeon General should be the individual to whom the public may turn when their expectations for health care are not being fulfilled.
>
> The Service would welcome this assumption of central responsibility for health on behalf of the people.

The memo continues to describe a proposed organizational plan consisting of 8 major components, as follows:

Bureau of Health Services
Bureau of Health Manpower
Bureau of Disease and Injury
Prevention and Control
National Institutes of Health
National Institute of Mental Health

and, reporting directly to the Office of the Surgeon General, the National Library of Medicine and the National Center for Health Statistics.

The memo continues:

> The rapid growth of Federal involvement in health affairs has made our present organizational structure obsolete and dictated the need for reorientation. There is every reason to expect that this involvement will continue to grow and diversify. Therefore, any structure must be adaptable to change . . .

Does this memo spotlight a "stage door Johnnie" or a "stand-in" waiting in the wings of the public stage?

## The hospital

Let's examine more closely some of the changes and choices being brought about by these pressures and effects of regulations in view of our concern for high quality care, the continuation of prepaid medical care insurance, our concern over methods of physician remuneration, and our need to strengthen and maintain the tools, mechanisms, and techniques now available to the medical profession.

PL 89-97 has embodied in it concepts which may have a profound impact on the practice of medicine, the insurance industry and the methods of physician compensation.

In broad terms, this law establishes the hospital as the center of medical care for the community. It establishes methods by which standards of care can be enforced and quality of care evaluated and judged. It provides standardized definitions which now serve as a national mode of communication, for example, extended care facility, utilization review, prevailing charges, transfer agreement, and home health services, to mention only a few.

PL 89-97 establishes the premise of high level, centralized policy, leaving implementation to those who provide the care, yet establishing a secondary level of supervision to make sure various stipulated criteria are met by the providers. It places within the realm of reality, for 15 to 20% of the population, the meaning of many of the relatively new phrases and words in the medical and health planning vocabulary, such as, "broad

*(Continued on page 322)* ➤

spectrum of services," "continuity of care," "progressive care," "home care," "mainstream care" and "comprehensive care."

Fragmentation of practitioners into more specialties and subspecialties may be promoted by the Heart, Cancer and Stroke Program. At the same time, general practitioners, internists, and surgeons will receive the bulk of the increase in home, office, nursing home, and hospital care under PL 89-97. Ophthalmologists and urologists will also feel the impact of this newly released demand for services. Paramedical personnel will begin to face new and more demanding problems in education, striving for professional status, certification, and licensure.

The mobility of our population will probably add to the emphasis being placed on the hospital as a community health center; and provisions in the new law for outpatient and clinic diagnostic services may further increase this emphasis. Our present supply of health manpower will be used to its limits, and any shortages in such manpower may encourage greater numbers of people to turn to hospital emergency rooms and outpatient departments for immediate, necessary care. Physicians can respond to increased demands only to the limits of their human capacity. This fact alone may accelerate the movement into group practice by larger numbers of practitioners.

The hospital setting presents an area for some interesting speculation. Obviously, health facility planning must either develop real teeth, real community support, and real coordination, or bow to government control.

Hospital accreditation has been a voluntary effort. *Now,* the meaning of accreditation is assuming a somewhat different significance. The hospital medical staff must now show increasing proof that through its cooperative effort, it can and will assume responsibilities for education, quality control and, to a degree, evaluation of "physician obsolescence."

The physician must accept the evaluation of his colleagues, and unless his performance meets their combined standards, his privileges of practicing in the institution may be lost. It's possible; therefore, to view the hospital medical staff as becoming the *de facto* surveillance group of the community for physicians in hospitals, and the county medical society becoming the equivalent for physicians providing outpatient care.

### Health insurance

All of these factors will have an impact on the costs of medical care and the way physicians are paid for their services . . . an impact with many good features, many bad, but definitely an impact of magnitude.

The most obvious implication is the elimination from the voluntary insurance market of about 10% of the population unless voluntary health insurance fills the gaps quickly. Future voluntary insurance programs are already being integrated with Medicare, as pension plans have been with Social Security benefits.

Also, it is only natural to expect labor and other employee groups to demand at least the same scope and type of benefits for the below-65 group as is now available to the retired. This factor alone will increase the pressures from the insurance industry to cast aside caution and to rely on the standards being established by government in lieu of previous experience and underwriting principles.

A test of some traditional concepts regarding co-insurance and deductibles is in the offing; the insurance industry will, in my opinion, be compelled to follow the experience of PL 89-97. Voluntary prepaid medical care insurance must change from its primary emphasis on in-hospital coverage and join the movement toward coverage for total care of the patient; it must also — in the main — follow the concepts of customary, reasonable, and prevailing fees for physicians.

Employers and the insurance industry certainly must be looking at the cost control devices demanded by government in PL 89-97, and it seems reasonable to expect that industry will rely increasingly on services made available by the medical profession in identifying excessive hospital and nursing home utilization, unusual fees, unusual patterns of outpatient care, and fraud. Industry will also gain from the new emphasis by hospitals on standardized cost accounting.

It is interesting to speculate on the possible acceptance, at least in part, of the Australian system of making insurance available to all, or encouraging its acquisition, by combining the elements of partial payment by the patient and fee-for-service for the physician, with the entire system being underwritten, in part, by a tax-supported subsidy.

All that I have mentioned thus far focuses on the topic given to me for today. It is now obvious that —

(1) A universal, single mode of communication, adapted to the electronic age and the needs of computers, is necessary.

(2) Due to an accelerated social revolution, ever diligent, continuing efforts are necessary to codify in precise terms the various things a physician does or can do.

(3) The government has honored, at least temporarily, the claim of the medical profession that it is truly a profession, capable of self-determination and self-discipline.

(4) The government has broken away from the static fee-schedule concept and has acknowledged the system of free enterprise, supply and demand, marketplace method of establishing physicians' fees on the basis of the customary, reasonable, and prevailing charges.

(5) The fee-for-service concept is also to be given a fair trial — in full public view. The basis for this comparison is built into PL 89-97, with special provision made for payment to closed panel group practice plans on a reasonable cost basis.

### Relative value studies

The RVS is, in my opinion, one of the major tools available to the profession in meeting many of these challenges. There is not available, at this time, any other device which meets the communication needs of common coding and terminology of medical procedures; nor is there any better tool, readily available to physicians and administrators, which provides guidelines for determining the approximate or appropriate relationships between services performed by physicians.

The problem is to keep the document current, to redefine terms, to correct or to clarify definitions of medical procedures as these change. Let me cite 1 or 2 examples where change may already be indicated: The RVS Surgical Section has many unit values based on the global fee concept. With the expanding development of progressive levels of care, such

as Hospital, Extended Care Facility, and Home Care; with dietitians, physical therapists, and visiting nurses requesting instructions, clearances, and directions; and with periodic recertification of need, the physician's sphere of responsibility is increased, his time more divided between facilities and personnel without any recognized need for concurrent change in payment.

The use of the RVS by some carriers and county society review committees, in the evaluation of customary and reasonable fees, may raise the issue of dual schedules or differential fees for various specialties. The RVS does not acknowledge the age-old argument about dual fee schedules. The theory embodied in the RVS is that equality is an inherent element in the assignment of unit values, since specialists determine unit values for procedures which *only* they can perform, while other units reflect the concept of equal payment for equal service regardless of specialty. This concept certainly seems sound to me, especially where peer judgments control the extent of a physician's professional freedom within the hospital setting. If these factors are found to have a serious effect upon the RVS, it will, of course, have to respond to new demands of medical practice.

After nearly 13 years of effort, the CMA has not produced a *perfect* document, nor does it ever expect to be able to do so. How can an RVS be flawless, in view of changes in medicine which are so complex that even general predictions are impossible? But is there any better tool available at this point in time?

Currently, 24 state medical societies and 6 national specialty organizations, whose members constitute more than half of all physicians in private practice, have adopted an RVS. The AMA is now working on a national listing of coding of procedures, using its booklet, "Current Procedural Terminology," as a basis. It is being designed for use by physicians, insurance carriers, and government. This new approach, too, has its shortcomings, because any document which is national in scope will lag more in reflecting change than a state-based counterpart.

**The intermediary**

PL 89-97 provides the profession with an opportunity to retain a system of payment which physicians believe in, accented by the stated desire of the U.S. Senate Finance Committee that the government *not deal directly* with physicians — but through intermediaries. That system embodies payment based on fee-for-service and interpreted on the basis of customary, reasonable, and prevailing charges; with geography, specialty, and unusual problems all taken into consideration.

An additional factor is the acknowledgement by the Federal Government and Congress that a physician's customary charge is not necessarily a static amount; that he may alter his charges at will, provided he does so for all of his patients; and that in cases commanding a higher than usual fee, that the circumstances be reviewed and recommendations made by his peers.

I have mentioned the government's recognition of the practice of medicine as a profession. Just what is a profession? Licensure by a public body is, of course, an accepted standard but there are other standards, too.

A profession is a group of learned people who adopt higher than normal standards of behavior and accept the responsibility of self-discipline. It also is a group willing and able to exercise reasonable judgments and self-restraint, to be dedicated to a cause, and to accept public responsibility for its activities.

In the implementation of PL 89-97, the medical profession is being asked to assume the authority which is necessary to meet its responsibilities.

In granting the profession most of its time-honored principal elements considered necessary for the provision of high quality care, acceptance is now a public matter of:

1. Free choice of physician.
2. Fee-for-service reimbursement.
3. Customary and reasonable fees.
4. Preservation of the dignity of the patient, and
5. Freedom from interference by government in the delivery of care.

These are all factors repeatedly stated to be necessary for a free profession to progress and to provide a continuous high level of care.

**Terminology**

Yet only a few days ago, a physician said to me, "You know, I'd rather be paid on a schedule based on the 1964 RVS with a $6 factor than on the usual and customary basis!"

After I'd recovered sufficiently, I asked the obvious "Why?"

His answer was even more surprising. "Because," he said. "I will have no responsibilities under a schedule." During the same day, another physician told me that he would rather be paid on the basis of usual and customary charges than on a fee schedule based on the 1964 RVS with a *$10* unit conversion factor. In response to my question, "Why?", he answered, "It's the principle involved." Two different approaches, with a real potential for conflict within the profession!

Join me while I examine, in part, factors included in both statements:

Let's start with the key portions of the fee definitions used in PL 89-97:

*Customary* — "the customary charge for similar services generally made by the physician."

*Prevailing* — "the prevailing charges in the locality for similar services."

*Reasonable* — "in determining the reasonable charge for a physician's services, there shall be taken into consideration the customary charge for similar services generally made by the physician as well as the prevailing charges in the locality for similar services."

The term "prevailing" has other legal definitions as well. This one resulted from a court decision in Baltimore: "The word prevailing is properly construed as meaning prevalent, most general, common, predominant as current, and not as meaning *either* an average or a median."

Obviously, there are several important words in these definitions that to me can never be related to any fixed fee schedule, no matter what the value of the conversion factor. To be specific: The definitions relate to each individual physician, not all physicians, *in toto*. This means that there can be recognition for training, years of experience, time spent with a

*(Continued)* ➤

patient or difficult case, variations in overhead and variations between people. The definitions indicate that there is a range of fees which is related to the norms of a community. Certainly, the "professor type" care is not usual within a community — nor is bargain-basement-type care. Fees and patterns of care should be compared, viewed or evaluated on the basis of *local customs* within a geographic locality. There is within each community a range where fees are reasonable; there is also a level at which a fee is unreasonable. Lastly, no physician is bound by the units in the RVS, since they represent averages or norms and are recognized as guides or as a means of communication only.

There are, however, some problem areas in the usual and customary fee approach. For instance:

(1) The community range of reasonable charges may become narrow, with the elimination of highs and lows, and tend to become a spongy type of self-imposed fee schedule. True, *except* that government, in PL 89-97, has stated that the physician's fee is recognized to be *not* static, hence the reasonable range is moving, dynamic and flexible, not fixed.

(2) Physicians must accept great and grave responsibilities to assure the success of this approach and to meet adequately the public trust now placed in their hands.

(3) No matter what the situation, there must always be both fiscal controls and fiscal standards established and maintained by someone. This fee approach requires that physicians do this by sitting in judgment of their peers and by exercising reasonable restraint.

(4) The usual-and-customary-fee approach embodies ethics, law, and professional responsibility.

(5) The usual-and-customary approach can be very difficult for a carrier or fiscal agent to administer.

But, are these hurdles too much to expect a profession to overcome?

### Fee schedules

Let's take a look at fee schedules. One good feature which I recognize is that a schedule will help in estimating and controlling total costs. This is of real value when the profession, by mutual agreement, seeks ways to make care available to families of low income. The Blue Shield concept is based on this approach, as are many of the Foundation programs. This feature has demonstrated its value to one method of making medical insurance meaningful for millions of people.

Self-administered health and welfare plans also need some assurances of cost controls. In the absence of wide experience with usual and customary fees, the financial soundness of these types of arrangements needs to be protected.

But what are some of the bad features?

(1) A schedule pays all physicians equally without regard to the true value of their services in the open competitive market place or without regard to the quality of care provided. There is no supply and demand relationship to determine the marketable sales price of a commodity.

(2) A fixed schedule is not resilient and is slow to respond to changes in local economic conditions.

(3) A schedule tends not to recognize any variation between location of practice such as urban, rural, downtown versus main street, or community patterns, type or scope of services demanded or needed by the patient.

(4) The fee level of a schedule is based on the economic situation of a particular employer or segment of the population — mostly a by-product of labor-management negotiations for employee fringe benefits.

(5) A schedule can be unreasonable — either high or low — and can cause either an inflation of costs to others or poor, bargain basement care for bargain basement fees, even though this latter is recognized as unsound and against medical policy.

(6) A schedule does not permit a physician to determine what he considers to be a fair profit.

(7) A schedule may hinder the scope of care a physician may render a particular patient without financial subsidy or possible loss to the physician.

In California, we have been fortunate in getting the same fee language used in PL 89-97 put into our state law implementing Title XIX, which became effective on March 1. It calls for customary, reasonable, and prevailing fees. At the outset of the program, it was necessary for the state designated administrative agency, our Blue Shield Plan, to set up some claims review mechanisms, so that claims falling into approximately the top third of a community range would be subject to an administrative and professional review.

CMA asked that CPS use, *as the beginning point for this review,* a countywide coefficient on the 1964 RVS for each county within the state. These figures were derived from a 1963 statewide survey of fees and adjusted for cost of living increases through 1965. After nearly 4 months of experience with the customary-and-prevailing fee application, the results, in my opinion, prove that this concept is workable and sound, provided that members of the medical profession, acting through county medical society professional review committees, shoulder their responsibilities faithfully and face up to problems squarely.

To emphasize this point, since March 1, CPS has paid a total of 323,951 claims from physicians. Of that number, approximately two-thirds fell within the county-wide guidelines and have been paid without the necessity of special review. Of the other third, it has been estimated that less than 5% were referred to county society review committees for study and recommendation on the reasonableness of the fees or on patterns of care.

To me, the real major difference between a schedule and the usual-customary approach is the question of standards. Who establishes them? Who enforces them and who is responsible for their modification?

### Professional obligation

Now that PL 89-97 has suddenly thrust on the profession this new responsibility and authority — which it pleaded for — what will happen if the profession fails to meet its professional obligations? Surely, a loss of prestige and a loss of public trust and confidence. The profession of medicine stands to lose its effective voice and, in the public eye, forever relinquish its rights to a second chance or to valid consideration.

If, on the other hand, the public trust is upheld, it is reasonable to expect that the concept of usual and customary fees will become an accepted fact of life for most medical care programs.

The Foundations for Medical Care have, I believe, an exceptional opportunity to assert their leadership. More than ever before, claims review, outpatient utilization review, and cost and quality controls depend on effective interpretation of local customs and patterns. Here is your opportunity to prove

that the know-how gained from other programs has qualified you to lead by example and to teach or help others who may weaken and fall by the wayside.

In Eric Fromm's book, *Escape from Freedom*, he analyzes man's desire for freedom, and his flight, when it is once achieved, from its responsibilities. In discussing the problem of freedom, in its two-fold meaning, Doctor Fromm stated that freedom *from* the traditional bonds of medieval society, though giving the individual a new feeling of independence, at the same time made him feel alone and isolated, filled him with doubt and anxiety, and drove him into new submission and into a compulsive and irrational activity.

Doctor Fromm asks in his book, "can freedom become a burden, too heavy for man to bear, something he tries to escape from? Why then is it that freedom is to many a cherished goal and for others a threat?"

The medical profession must not seek to escape from its new found freedom, even though its burdens are great and its responsibilities tremendous; neither must this freedom be abused.

I firmly believe that if the profession does not fulfill the public trust and confidence as exemplified in PL 89-97, it will enter a new and long period of submission.

Responsibility always carries with it difficulties, yet determination and purpose can usually prevail.

An appropriate conclusion should be to quote, in Hawaiian, some great pearl of wisdom. Unfortunately, I neither speak the native tongue nor do I have a pearl. I can, however, say that I welcome this opportunity to contribute to the *customary* confusion, *prevailing* turmoil, and *reasonable* ferment.



"No, Mrs. Adams, you've got it wrong — the ailment was imaginary, the bill is real."


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**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

**References:**

1. A. Morales et al., New England Journal of Medicine: 1221. November 12, 1981.
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## The decade of the seventies in the *Journal*

The article by George G. Rhoads, Gary A. Glober and Grant N. Stemmermann: *A Review of Some Tumors of Interest for Demographic Study in Hawaii,* published in the *Hawaii Medical Journal* of Vol 33, No 8 August 1974, exemplifies the importance and advances made in the field of medicine in the seventies.

The origin and etiology of cancer still remain an enigma. However, this carefully detailed article sheds additional light and understanding into the subject of cancer.

By statistical demographic analysis of the incidence of various cancers in various ethnic groups in Hawaii, clues were found in various cancer sites as compared with the rates in the respective countries of origin and with respect to Westernizing environmental influences. It appears that significant environmental factors must account for some of the extensive cancer rate differences among the various countries around the Pacific.

This kind of epidemiological study advances a better understanding of and insight into cancer. This can lead to a reduction in cancer morbidity and mortality. Research of this nature is highly commendable and continued study along these lines is to be encouraged.

Robert T. S. Jim MD
Honolulu

*. . . types of cancer related to ethnic groups and culture*

# A review of some tumors of interest for demographic study in Hawaii*

George G. Rhoads MD MPH**
Gary A. Glober MD†
Grant N. Stemmerman MD†

*Because of its multiracial character, Hawaii presents a unique opportunity to carry out demographic investigations of the etiology of certain common cancers. Tumors with substantially different incidence rates among the major ethnic groups in the Islands, or between a given immigrant group and its country of origin, are of particular interest for such studies. Among the cancer sites meeting these criteria, nasopharynx, stomach, prostate, large bowel, liver, female breast, uterine corpus, ovary, bladder, and thyroid are particularly prominent.*

With the development of cancer centers at various sites around the United States, it is to be hoped that such centers may become important national resources for cancer research.[1] Planning and development of such a center in Hawaii has begun. An acting core group representing multidisciplinary interests would implement the center program, their activity supervised by a policy task force representing various community groups.

Several factors make Hawaii a good place to look for clues to carcinogenic factors for some common cancers. Three sizable Asian groups, as well as persons of European and Hawaiian ancestry insure a diversity of ethnic groups available for study. On islands it is relatively easy to define populations and to follow cases. With the total population of Hawaii less than a million, only relatively common tumors are of sufficient number for study.

A differential in incidence rates of various ethnic groups aids in carrying out etiologic studies among them. The Asian people in Hawaii having immigrated in the last 2 or 3 generations, they are presumably genetically similar to populations in their respective countries of origin, but they have been exposed to strong Westernizing environmental influences and have developed different patterns of disease.

Advantage can be gained from this spontaneous sociomedical experiment by making 2 kinds of comparisons. First, tumor incidence rates in a given ethnic group in Hawaii can be

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** Address reprint requests to Dr Rhoads at the School of Public Health, University of Hawaii, 96822
† Japan-Hawaii Cancer Study
Kuakini Hospital
347 Kuakini Street, Honolulu, Hawaii

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compared to the respective rates in the country of origin. Clues to possible carcinogenic factors can be derived from known differences in the environments and tested with case-control or cohort studies in the respective Hawaiian and indigenous Oriental populations. This approach has to date been most successfully employed in comparisons between people in Japan and Japanese Americans now living in Hawaii and California. Similar comparisons might be possible for Filipinos and Chinese.

A second type of comparison can be made among the several racial groups now living in Hawaii. They have different disease experiences, different environments arising from socio-economic and cultural factors, and different genetic and physiologic characteristics. Since the various groups are in geographic proximity, it is feasible to compare these parameters, minimizing methodologic differences in interviewing and laboratory techniques which threaten any cross-cultural study. Thus the following hypotheses may be constructed: environmental differences → physiologic differences → disease (tumor) differences.

Within this general background, some cancers which invite demographic study in Hawaii may be listed. They are tumors which occur frequently enough to study in the relatively small populations, and which: (1) have incidence substantially different from those in the 3 oriental countries of origin and in the United States; or (2) have substantially different incidence among ethnic groups in Hawaii.

This review is based on standard references giving interna-

TABLE 1: Age-adjusted death rates for selected cancers in Japan, China, and the United States (Caucasians) by sex (1964-65)*

| | MALE RATES PER 100,000 | | | | FEMALE RATES PER 100,000 | | | |
|---|---|---|---|---|---|---|---|---|
| | U.S. Caucasians | Japan | China | | U.S. Caucasians | Japan | China | |
| | | | Taiwan | Hong Kong | | | Taiwan | Hong Kong |
| All sites | 143.9 | 140.2 | 96.4 | 159.9 | 104.5 | 94.7 | 73.6 | 94.5 |
| Esophagus | 3.3 | 7.1 | 8.3 | 12.4 | 0.8 | 2.2 | 2.1 | 2.5 |
| Stomach | 9.4 | 68.6 | 22.5 | 21.3 | 4.7 | 35.3 | 12.8 | 12.3 |
| Intestine (except rectum) | 13.7 | 3.3 | 4.5 | 6.5 | 12.8 | 3.2 | 4.3 | 5.0 |
| Rectum | 5.4 | 4.7 | 2.4 | 4.7 | 3.4 | 3.5 | 2.4 | 2.9 |
| Liver and biliary passages (includes secondaries) | 4.5 | 14.6 | | | 4.2 | 9.2 | | |
| Lung bronchus and trachea | 36.9 | 12.6 | 8.9 | 29.8 | 5.8 | 4.5 | 6.0 | 14.6 |
| Breast | | | | | 21.8 | 3.8 | 4.0 | 9.6 |
| Uterus (all parts) | | | | | 10.3 | 13.5 | 15.6 | 12.1 |
| Ovary, fallopian tube and broad ligament | | | | | 7.3 | 1.7 | | |
| Prostate | 12.7 | 1.9 | 1.0 | 2.8 | | | | |
| Bladder and other urinary organs | 5.0 | 2.2 | | | 1.7 | 1.0 | | |
| Thyroid | 0.3 | 0.3 | | | 0.5 | 0.5 | | |

*Summarized from Segi M, Kurihara M, and Matsuyama T. *Cancer Mortality for Selected Sites in 24 Countries, No. 5 (1964-1965)* Department of Public Health, Tohoku University School of Medicine, Sendai, Japan. 1969, pp. 106, 118, 122, 126, 159.

TABLE 2: Age-adjusted incidence rates per 100,000 for selected cancers in men in Japan, Singapore, Hawaii, and the Mainland U.S.[1]

| | U.S. Mainland | | Hawaii (1960-64) | | | | | Japan | | Singapore |
|---|---|---|---|---|---|---|---|---|---|---|
| | Alameda County Whites (1960-64) | Connecticut (1963-65) | Hawaiian | Caucasian | Chinese | Filipino | Japanese | Miyagi (1962-64) | Okayama (1966) | Chinese |
| Nasopharynx | 0.5 | 0.5 | 7.8 | 1.1 | 10.4 | 3.1 | 0.9 | 0.1 | 0.4 | 16.1 |
| Stomach | 15.3 | 14.7 | 45.9 | 16.9 | 9.5 | 9.7 | 47.6 | 95.3 | 93.9 | 12.9 |
| Colon | 24.0 | 26.7 | 20.2 | 19.3 | 35.9 | 12.6 | 20.7 | 4.1 | 4.6 | 2.6 |
| Rectum | 15.5 | 16.3 | 6.8 | 12.6 | 15.8 | 12.4 | 11.7 | 4.8 | 6.7 | 5.0 |
| Liver (primary) | 2.4 | —— | 15.2 | 4.3 | 7.3 | 6.1 | 6.7 | 1.3 | 0.3 | 8.6 |
| Bronchus, Trachea[3] | 47.8 | 44.0 | 70.3 | 43.8 | 27.2 | 17.1 | 26.3 | 15.6 | 15.3 | 12.9 |
| Prostate | 38.0 | 33.0 | 30.0 | 43.4 | 9.8 | 17.6 | 13.9 | 3.2 | 4.3 | 0.9 |
| Bladder[2] | 17.9 | 19.9 | 9.9 | 19.3 | 9.4 | 1.5 | 9.0 | 4.7 | —— | 2.1 |
| Thyroid | 2.8 | 0.8 | 5.7 | 4.4 | 3.5 | 5.0 | 1.7 | 0.8 | 1.1 | 0.5 |

[1]These data for all locations except Singapore are taken from Doll R, Muir C, and Waterhouse J, *Cancer Incidence in Five Continents*, Volume II. Springer-Verlag: New York, 1970. The Singapore data are from Volume I (1966) of the same reference. Age standardized to World population.

[2]"Benign" Papilloma is included in Mainland U.S. and excluded in Japan. It is not known how it was handled in Hawaii or Singapore.

[3]Includes primary and secondary.

*(Continued)* ➤

TABLE 3: Age-adjusted incidence rates per 100,000 for selected cancers in women in Japan, Singapore, Hawaii, and the Mainland U.S.[1]

| | U.S. Mainland | | Hawaii (1960-64) | | | | | Japan | | Singapore |
|---|---|---|---|---|---|---|---|---|---|---|
| | Alameda County Whites (1960-64) | Connecticut (1963-65) | Hawaiian | Caucasian | Chinese | Filipino | Japanese | Miyagi (1962-64) | Okayama (1966) | Chinese |
| Nasopharynx | 0.2 | 0.1 | 0.7 | 0.9 | 4.6 | 0.0 | 0.3 | 0.1 | 0.0 | 5.8 |
| Stomach | 7.4 | 6.8 | 24.5 | 8.8 | 14.2 | 1.5 | 26.9 | 44.7 | 45.7 | 3.7 |
| Colon | 22.9 | 26.7 | 12.1 | 27.5 | 23.5 | 14.8 | 15.3 | 4.0 | 4.6 | 2.2 |
| Rectum | 10.1 | 10.7 | 6.9 | 9.8 | 9.4 | 13.4 | 9.3 | 5.0 | 4.5 | 2.6 |
| Liver (primary) | 0.9 | —— | 4.0 | 1.9 | 0.0 | 5.3 | 1.1 | 0.8 | 0.4 | 1.2 |
| Bronchus, Trachea[4] | 7.4 | 7.8 | 22.3 | 10.2 | 16.7 | 17.4 | 7.6 | 6.0 | 5.2 | 3.2 |
| Breast | 62.4 | 62.3 | 52.3 | 62.9 | 44.3 | 19.5 | 23.0 | 11.0 | 12.4 | 8.0 |
| Cervix Uteri | 17.9 | 10.3 | 26.4 | 15.4 | 19.6 | 22.0 | 14.6 | 20.6[2] | 22.4[2] | 21.4 |
| Corpus Uteri | 16.8 | 15.3 | 23.9 | 17.5 | 19.5 | 16.2 | 10.8 | 1.3 | 2.2 | 4.2 |
| Ovary | 12.6 | 11.3 | 16.6 | 14.8 | 13.1 | 4.8 | 9.4 | 1.9 | 2.8 | 3.2 |
| Bladder[2] | 5.6 | 5.9 | 5.0 | 5.9 | 0.0 | 4.0 | 2.1 | 1.6 | —— | 0.5 |
| Thyroid | 7.4 | 3.0 | 10.1 | 5.4 | 20.7 | 14.3 | 6.5 | 2.0 | 3.3 | 1.0 |

[1]These data for all locations except Singapore are taken from Doll R, Muir C, and Waterhouse J, *Cancer Incidence in Five Continents*, Volume II. Springer-Verlag: New York, 1970. The Singapore data are from Volume I (1966) of the same reference. Age standardized to World population.
[2]Includes case of carcinoma-in-situ.
[3]"Benign" Papilloma is included in Mainland U.S. and excluded in Japan. It is not known how it was handled in Hawaii or Singapore.
[4]Includes primary and secondary.

tional comparisons of cancer incidence[2,3] and mortality.[4] Age-standardized summaries are presented for the mortality data in Table 1, and for the incidence data in Tables 2 and 3. The age-standardized rates may conceal important age variability which is evident in age-specific rates, and readers are urged to investigate points of interest to them in more detail in the original sources. Extensive reference is also made to the Hawaii Tumor Registry data,[5] and to Haenszel and Kurihara's previous work on mortality from cancer and other diseases among Japanese in the United States.[6]

## Sites of common cancers

*NASOPHARYNX*

This cancer is frequent among Chinese, particularly those from South China. Frequency remains high in Chinese emigrants, but is lower among the children and grandchildren of emigrants in California,[7] Hawaii,[8,9] and Australia.[10] In Singapore, where the Chinese population is presumably less Westernized, the descendants of emigrants do not enjoy a lower risk.[11] Thus, the impact of Westernization appears to protect against this cancer. Careful case-control studies might be productive in implicating one or more aspects of the Chinese environment in the carcinogenesis of this tumor. Demonstrated relationships between nasopharyngeal carcinoma and EB virus[12] could be studied among cases from various ethnic groups in the Islands. Such a study would have to extend over several years in order to accumulate sufficient cases of this relatively infrequent tumor.

*STOMACH*

Stomach cancer is more than 5 times as frequent among Japanese as among the U.S. white population. People of Japanese ancestry living in Hawaii have less stomach cancer than have people living in Japan, but substantially more than is found on the U.S. Mainland. Comparisons of the frequency of stomach cancer among racial groups in the Islands have been previously reviewed.[13] It is most common in Japanese and part-Hawaiians. High rates in the latter group have been largely ignored by investigators interested in this tumor.

On a histologic basis, gastric cancer has been divided into 2 major types: intestinal and diffuse.[14] Evidence suggests that excess occurrence of the disease in Japan is predominantly of the intestinal type, which may be more apt to be induced by environmental carcinogens than is the diffuse type. There is also evidence that sex-tumor type interactions may result in better survival of women with diffuse cancer than of men. A larger percentage of women are without node development, and this may be a racial effect seen oftenest [sic] in Orientals.[15]

Among Japanese-Americans, rates among Issei have remained high, while the Nisei may have a slightly lower susceptibility.[6] This suggests that stomach cancer has an extremely long induction period, perhaps as long as 30 to 40 years. Recent case-control studies in this community by Haenszel et al, suggest that dried and salted fish and pickled vegetables have been more commonly eaten by persons with gastric cancer than by controls.[16] In an earlier Hawaii study, Quisenberry also reported excess consumption of pickled food items in persons with gastric cancer.[13] Stomach cancer is one of the focuses of the Japan-Hawaii Cancer Study, which is examining and following more than 7,500 older Japanese men on Oahu. Plans are to extend these observations to younger persons and to include women. Persons of European ancestry living in Hawaii and Japanese still living in Japan will also be studied. Assays of pepsinogen and gastrin levels are being carried out in subsamples of these groups, in hope of uncovering physiologic differences which may underlie the high incidence of gastric carcinoma among the Japanese.

*PROSTATE*

Age-adjusted death rates for carcinoma of the prostate are

6 times as high in the United States as they are in Japan. Low rates are also reported for Taiwan, Hong Kong, and the Philippines. Cancer registry data suggest that, in Hawaii, Caucasians (whites) are 3 times more likely to get prostatic cancer than are Japanese. Low age-adjusted rates are also reported by the Hawaii Tumor Registry for the Chinese and Filipinos here, with an intermediate rate reported for the Hawaiians/part-Hawaiian group.

Incidence of clinical carcinoma of the prostate increases rapidly with age, and small asymptomatic carcinomas are a frequent incidental finding at autopsy in older men. Karube has found latent carcinomas of the prostate in Japanese autopsy specimens with a frequency comparable to that in U.S. whites.[17] This suggests that prostatic cancer may arise in the 2 populations with equal frequency, but that some environmental factor nurtures and makes them more clinically manifest in the U.S. An alternative explanation is that some inhibitory mechanism, perhaps of an immunologic nature, operates more effectively in Japan than in the U.S.

Akazaki and Stemmermann have compared the frequency and histologic appearance of these latent carcinomas between Japanese living in Japan and living in Hawaii. Using strictly comparable methodology, they found little difference in the overall frequency of carcinomatous foci, but those in Hawaii were larger and more anaplastic than were those in Japan.[18]

Epidemiologic studies have suggested possible relationships of prostatic cancer to particulate air pollution[19] and to cadmium exposure,[20] but these factors do not appear to explain the large difference in incidence between the U.S. and Japan. Further studies are indicated, perhaps in Hawaii.

*LARGE BOWEL*

Cancers of the colon and rectum might be regarded as closely related clinically, but there is reason to separate them epidemiologically. While deaths from carcinoma of the colon are about 4 times as common among U.S. white men as among men in Japan, there is little difference in the rates for rectum cancers. Somewhat different patterns emerge among Chinese and Filipinos, but the predominant implication of Table 1 is that cancer arising above the rectosigmoid junction is epidemic in the United States. Cancer registry data confirm that the gradient between the U.S. and the Orient is greater for the colon than for the rectum, and they suggest that Japanese and Chinese men in Hawaii are already experiencing rates of colon cancer comparable to those found among whites. Oriental women may still be enjoying a somewhat lower rate, a point of some interest for future investigations of this cancer.

Detailed necropsy studies of the colon were undertaken by Stemmermann among Hawaii Japanese.[21] He found that asymptomatic carcinomas were frequently missed clinically in the older patients. This results in an understatement of the true incidence of the disease in Japanese but may not greatly affect interracial comparisons, since similar findings have been reported in whites and blacks from Los Angeles.[22] More recent studies include an effort by Stemmermann and Yatani to evaluate the possible relationship of carcinoma of the colon to diverticulosis and polypoid disease.[23] Haenszel and his group have been investigating demographic and dietary histories of Hawaii Japanese with colon cancer. The Japan-Hawaii Cancer Study is planning to relate large bowel cancer to antecedent risk factors and are carrying out sophisticated analyses of stools of patients in an effort to find possible carcinogenic mechanisms.

*LUNG*

The highest rate for lung cancer in the Islands is among the Hawaiians and part-Hawaiians. Men of European ancestry have slightly lower rates, but they are still twice as likely to develop the disease as the local Japanese men. Rates for Chinese and Filipino men are comparable to those for the Japanese. In most of the racial groups, women have about one-third the rate of lung cancer that men have.

The epidemic of carcinoma of the lung now occurring in the United States has been clearly linked to cigarette smoking. Other factors, such as air pollution, may well play a role, however, and the disparate backgrounds of Hawaii's people might contribute to the evaluation of other factors. Quantitative study of past and present differences in smoking habits to see if they are sufficient to explain the varying rates of lung cancer in the several racial groups would be needed. Comparisons of each racial group to its population of origin would also be pertinent. The Japanese community is under study in a case-control format by Haenszel and Lee.

*LIVER*

According to registry data, primary cancer of the liver is more common in Hawaii than on the U.S. Mainland or in Japan. The rates for Caucasians (whites) are 50% higher in the Islands than in Alameda County, and among men, all of the other major ethnic groups in Hawaii have still higher rates. Among women, Japanese and Chinese appear to enjoy low rates, though the population numbers are small. High rates of primary liver cancer have been reported from the Philippines[24] and in Chinese populations in San Francisco[25] and in Singapore.[26] In the latter city, these rates were lower in second generation persons.

Stemmermann found hepatomas in 61% of Japanese patients with cirrhosis at autopsy and noted that similar findings have been made in Japan.[27] Only 3 to 8% of cirrhotics are found to have hepatoma in white populations,[28] suggesting that some difference in the process leading to or associated with cirrhosis in various racial groups may account for excess hepatomas in the Orient.

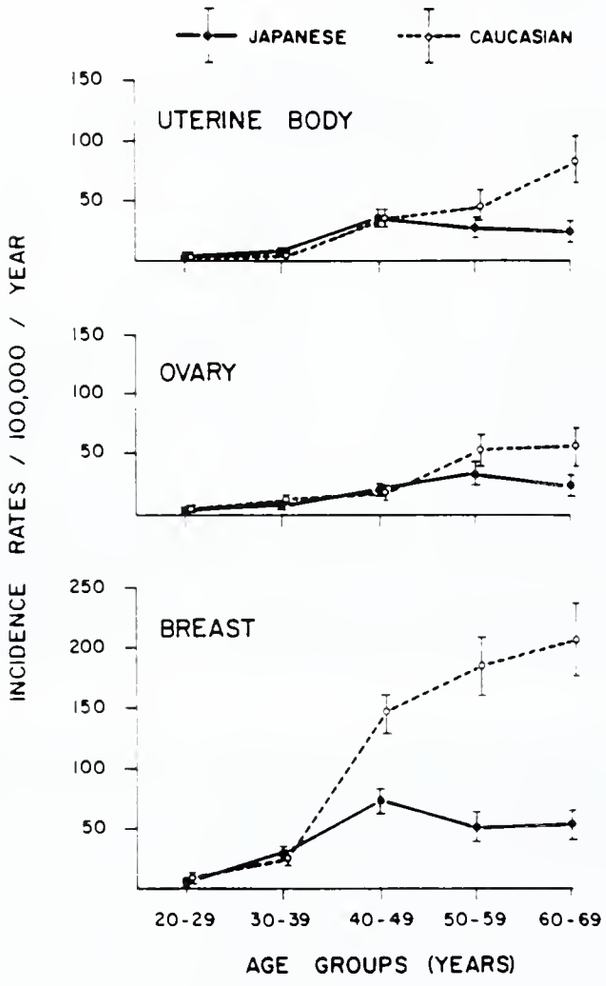
Increased rates of liver cancer among Asian groups are by no means as high as the rates reported from certain sections of Africa, where liver cancer accounts for as many as 50% of cancers coming to autopsy.[28] Africans are most commonly affected between the ages of 25 and 45, whereas only 5 of 120 cases recorded by the Hawaii Tumor Registry occurred in persons under the age of 40.[5] A large number of substances have been found to be carcinogenic for the liver in animals; different mechanisms may account for human hepatic cancer in separate parts of the world. The relationship of the hepatitis-associated antigen (Australia antigen, hepatitis type B antigen) with the induction of cirrhosis and hepatoma might be a worthwhile area of investigation.

*BREAST*

Large international differences in the incidence of breast cancer among women have long been known. While the hypo-

*(Continued)* ➤

FIGURE 1 — Incidence rates, Japanese women and Caucasian by age groups.




thetic protective effect of prolonged lactation has never been clearly substantiated, recent evidence indicates early childbearing is associated with a lower risk of breast cancer in later life. However, this accounts for only a small fraction of the international rate differences.[29]

Doll reported incidence rates in Japan and Singapore at less than one-quarter the rate in Connecticut. The Hawaii Tumor Registry data suggest that Filipino women have a rate akin to that in the Orient; that Japanese women have an intermediate rate, and that the incidence among the Chinese is approaching that of whites. The Japanese and white rates appear similar below the age of 40, but differ widely in the older age groups (Figure 1). Japanese women in Hawaii have tended to have smaller cancers, with fewer metastases than have Mainland white women, and 5-year survival has been somewhat better.[30] Possibly this better experience could be explained by either earlier diagnosis in the smaller Japanese breast, or slower growth as a result of genetically related factor, resulting in a more effective host response.

Cole and MacMahon have hypothesized that estriol protects against breast cancer, and they have been coordinating an international study of urinary estrogen fractions in young women as an indirect test of this hypothesis.[31] Hawaii has participated in this study under the local direction of Dr Louis Dickinson. Kumaoka and Bulbrook have found different patterns of progesterone and androgen metabolism in Japanese and white populations.[32] Further studies of hormonal fractions in breast cancer are being planned by the Japan-Hawaii Cancer Study in conjunction with Dr Greenwood.

*UTERINE CORPUS*

Carcinoma of the endometrium accounts for most cancer of the uterine corpus in this country, but in Japan choriocarcinoma comprises 40% of cases.[6] Thus, the substantial increase in cancer at this site in the U.S. reflects an even greater relative excess of endometrial carcinoma. Because of classification problems, quantitation of rate differences is difficult, but a conservative guess puts the Japanese rate for endometrial carcinoma at less than a third of the U.S. rate. Japanese women in Hawaii appear to have rates comparable to whites below the age of 50, but the older Japanese are relatively protected. Age-adjusted rates for Hawaiians, Filipinos, and Chinese were reported a little higher than for whites, but the numbers are small and the age-specific rates erratic. Cancer of the uterine corpus is rare among Chinese in Singapore.

Epidemiology of carcinoma of the endometrium parallels that for breast cancer.[6] Both are more common in nulliparous patients, and in international comparisons, rates for the 2 sites are highly correlated.[2, 3] Haenszel has pointed out that in migrant studies, rates for breast cancer adjust more slowly to a Westernized environment than do rates for uterine corpus. Data on Japanese women in Hawaii suggest it takes 10 years longer for breast rates to equalize than for corpus rates (Fig. 1). This could be due to a longer delay in the adoption of those aspects of Western culture which are responsible for the high rates of breast cancer than for those aspects associated with endometrial carcinomas whatever they might be; or it could simply reflect different induction periods between exposure to a common carcinogen and the development of the 2 diseases.

*OVARY*

Hawaii Tumor Registry reported 144 cases of ovarian carcinoma between 1960 and 1964. Age-adjusted mortality rates indicate a gradient of about 1 to 4 going from Japan to the U.S. Mainland. A large gradient from both Japan and Singapore to the U.S. is indicated by the international incidence comparisons.

Epidemiologically, ovarian cancer is similar to breast cancer and endometrial carcinoma in that it is more common in single women and tends to be a disease of more developed countries.[2, 33] Ovarian cancer tends to rise in a migrant population in concordance with cancer of the uterine body;[6] it does not show the delayed rise associated with breast cancer (Fig. 1).

*UTERINE CERVIX*

Incidence gradients for cancer of the cervix between the U.S. and Japan are somewhat confused by 2 problems. First, *in situ* carcinoma of the cervix is included in the data from the Miyagi and Okayama cancer registries. Since the number of *in situ* cancers will depend on the extent of Pap smears, measures limited to invasive carcinoma are probably more comparable. However, the number of invasive carcinomas is reduced by an effective cervical cytology screening program,[34] so there is no available method to get truly comparable data. Second, both morbidity and mortality data from Japan include a sub-

stantial number of uterine cancers of unspecified site. There is reason to believe that these are mostly cervical cancers.[6]

Haenszel and Kurihara estimated that age-adjusted mortality for American-Japanese women for cervical cancer was about one-half the rate in Japan and slightly, but not significantly, lower than the rate for U.S. whites.[6] Data from Hawaii Tumor Registry show age-adjusted rates for invasive cases which are quite similar for Japanese, Caucasians, Chinese, and Filipinos, with a somewhat higher rate for part-Hawaiian. There is a suggestion that Japanese women over 60 have more cervical cancer than those of European ancestry of like age. Cancer registry data from Singapore show rates for cervical cancer which are similar to those found in Japan. In general, the reported gradients across the Pacific or among ethnic groups in Hawaii do not exceed twofold. Investigations of genital herpes virus or other possible etiologies of cervical cancer remain to be carried out.

*URINARY BLADDER*

Carcinoma of the urinary bladder is about 4 times as common in Connecticut as in Japan. The Singapore rate is also very low. Hawaii Tumor Registry reported about half as much bladder cancer among Japanese as in whites, suggesting that the Japanese-Americans have rising rates. Chinese and Hawaiian men have rates similar to Japanese, while Filipino men seem particularly protected. In all races except Filipinos, the disease is more than twice as common in men as in women; in Japanese, this discrepancy is 5 times.

Smokers risk developing bladder cancer more than twice as often as non-smokers;[35] this may explain some international and sex differences. Rising mortality from bladder cancer in Japan[36] would be consistent with some effect from tobacco, though it could also reflect changing certification practices. In the U.S., there has been no rise in bladder cancer concomitant with rise in lung cancer.[37]

Certain aromatic amines are carcinogenic for urinary bladder and have been associated with an excess of cases in dye industry workers. The average time lapse between exposure and tumor is 16 years,[38] giving some clue to the delay that may explain international cancer differences. No evidence available suggests that exposure to industrial carcinogens explains the international differences in this cancer.

*THYROID*

Data from Hawaii Tumor Registry (1960-1964) suggested carcinoma of the thyroid is more common in Hawaii than anywhere else in the world.[2] This high rate was confirmed by Haber and Lipkovic in a review of cases from 5 major Oahu hospitals during 1962-1966.[39] Presumably there was considerable overlap of cases for 1962-1964. The number of cases in any group is small after classification by sex and race; women are affected more than twice as often as men. Age-adjusted rates among men do not vary greatly among the ethnic groups in Hawaii, except Japanese men seem relatively protected. Among women, whites and Japanese have lowest rates, Hawaiians and Filipinos come next, and Chinese are highest. The gradient between Japanese and Chinese is more than threefold.

Rates for thyroid cancer reported from Japan do not differ greatly from those in Connecticut. However, Alameda County reported a rate twice as high as either of them, so that there is some variability within the U.S. Mainland. Chinese women appear to have 20-fold more thyroid cancer in Hawaii than in Singapore, a phenomenon for which no ready explanation is available. Several benign diseases of the thyroid are also particularly frequent among Chinese women in Hawaii.[40]

Fukunaga and Lockett have shown that careful study of the thyroid gland from routine autopsies among Japanese reveals a high prevalence rate of occult papillary carcinoma in Hawaii (24%)[41] and similar findings have been reported from Japan (18%).[42] These studies also indicate that occult tumors do not increase in frequency with age; some of these lesions appear to be partially necrotic, suggesting that new tumors may not evolve into disseminated tumors but may be contained by some host factor. These prevalences of occult thyroid carcinomas among Japanese are many times higher than those found by comparable studies among whites.[43]

Only 2 of the 158 cases in the review by Haber and Lipkovic were incidental findings at autopsy. Of the 159 cases in Hawaii Tumor Registry, 149 had received treatment. In a survey of general population in Japan, persons whose thyroids were abnormal to palpation were referred for work-up and possible surgery; a prevalence rate of papillary carcinoma of at least 1 per 1000 was demonstrated from the surgical pathology.[44] Therefore, though Japanese have a high prevalence rate of occult papillary carcinoma, it apparently seldom causes the affected individuals any inconvenience. By contrast, in whites the prevalence of occult disease is less, but more often becomes clinically manifest.

In races where the prevalence of occult thyroid carcinoma is high, the frequency of surgery might have a large impact on the reported incidence of clinical disease. An evaluation of the frequency of occult thyroid carcinoma at autopsy among Chinese, part-Hawaiians, and Filipinos would lead to understanding the high rates reported for those groups. The influence of dietary iodine upon the genesis and progression of those tumors needs to be investigated.

*SKIN*

As skin cancer is not uniformly reported among cancer registries, reliable international rate comparisons are few in number. Since most cases are non-lethal, mortality comparisons have limited usefulness. The more invasive cancers are sufficiently rare to be difficult to study in Hawaii. Only 13 cases were recorded by Hawaii Tumor Registry from 1960-1964.[5]

The effects of sun exposure and race on the incidence of squamous cell and basal cell carcinoma have been the subject of considerable epidemiologic investigation. Both these entities are most common in areas of low latitude and in persons of European extraction. Allison and Wong reported a study of skin cancer which was carried out in Honolulu in 1955 and 1956.[45] They found that among Caucasians rates were higher in Hawaii than on the Mainland. In Table 4, their data are compared to more detailed breakdowns from 4 northern and 4 southern U.S. cities reviewed by Haenszel.[46] A clear excess of cases of both basal cell and squamous cell carcinoma is seen as one progresses from north to south.

Allison and Wong reported an overall skin cancer rate of 138 per 100,000 among whites and only 3.1 per 100,000 among non-whites in Honolulu. They found no significant dif-

*(Continued)* ➤

TABLE 4: Incidence of basal cell and squamous cell carcinoma among Caucasians in Honolulu and the U.S. Mainland

| | Four Northern Mainland Cities* (1947) | | Four Southern Mainland Cities* (1947) | | Honolulu** (1955-56) |
|---|---|---|---|---|---|
| | Men | Women | Men | Women | Both Sexes |
| Basal cell | 15.7† | 12.4† | 61.2† | 40.6† | 67.5 |
| Squamous cell | 8.9 | 5.3 | 32.3 | 14.3 | 62.0 |

*From Haenszel W. Variations in skin cancer incidence within the United States in U.S. *National Cancer Insti. Monograph No. 10,* 1963, pp 225-243. The figures are age-adjusted to the 1950 US population.
**Crude rates from Allison SD and Wong KL. Skin cancer: some ethnic differences. *Arch Derm* 76:737-739, 1957.
†Includes baso-squamous cell carcinomas.

ference among the various non-white races, though there was a tendency for those racial groups coming from tropical areas to have lower rates than did the more northerly groups. Thus, the crude combined rate (± 1 standard deviation) for Hawaiians, part-Hawaiians, and Filipinos was 1.5 ± 0.9 per 100,000, while the overall rate for Japanese, Koreans, and Chinese was 4.3 ± 1.1 per 100,000.

Questions to be answered include those of timing and duration of exposure, and the length of latent period between exposure and development of squamous cell and basal cell carcinomas. The history of immigration of whites to Hawaii provides a spectrum of age and of duration of residence in the tropics which might be fertile ground in which to seek some of these answers. The Islands would also be a favorable location for controlled trials of para-aminobenzoic acid or other agents intended to protect the skin from ultra-violet radiation.

*OTHER CANCERS*

With the exception of nasopharyngeal carcinoma and skin cancers (which are mostly not reported), more than 100 cases of each of the tumors discussed above were enumerated by Hawaii Tumor Registry from 1960 to 1964.[5]

A variety of other cancers have rate gradients across the Pacific and are potentially of interest for study in Hawaii, though they may not be quite as common. Prominent among these are the specific leukemias, Hodgkin's disease, choriocarcinoma, renal cell carcinoma, and cancers of the pancreas, esophagus, and gall bladder and extra-hepatic ducts. Investigation of these problems might require decades to accumulate sufficient cases.

## Discussion

Important environmental determinants of common cancers must account for some of the extensive rate differentials among the various countries around the Pacific. The combination of ethnic and cultural diversity in the presence of sophisticated medical diagnosis and care makes Hawaii a favorable location to identify these determinants.

A number of difficult problems arise in trying to identify specific cultural or dietary practices which are associated with chronic diseases. Most prominent among these is the untangling of a single identifiable cause from the mass of variables which change in the process of acculturation. Many of these variables tend to change simultaneously in a given ethnic community, and even in a given individual. An individual who grows up in Hawaii and goes to college will differ from his immigrant parents in many ways, including diet, social and cultural practices, and type of job. These changes may induce physiologic and anatomic changes, including greater stature, obesity, and higher serum cholesterol. If such a person gets a "Western" type of disease, ascertaining which environmental or physiologic changes are responsible may be difficult.

The first approach to the problem lies in characterizing a number of cases, comparing them to appropriate controls, and subjecting the results to univariate and multivariate statistical analyses. A second approach would be to add a dimension to the variability by looking at more than one racial group. Up to the present time, comparisons between Japanese and whites have attracted the most attention because of population size, and because there is a fair amount of reliable health data available from Japan to which comparisons can be made. Studies of the Filipino community would be of advantage, as has been suggested by Bennett.[47] Available information suggests that Filipinos are less Westernized and have lower rates of cardiovascular disease and cancer than do Japanese. They now constitute a substantial group in Hawaii. Their pattern of acculturation to life here is likely to differ somewhat from the Japanese pattern and might provide added insight into environmental determinants of certain cancers and other chronic diseases. The administrative feasibility of cohort and case-control studies in the Filipino community needs to be investigated.

A second major problem that will be encountered in studying cancer in Hawaii is the time lag between environmental influences which may produce disease and the actual appearance of the disease. Studies of radiation and of industrial carcinogens indicate that this delay is often measured in decades. Interracial differences in disease rates now may have been partly determined by cultural differences that existed before World War II. To quantitate past diets, habits, and sociocultural factors on an individual basis is difficult. To obtain data now on individuals to be followed for disease which may not occur for 20 or 30 years is expensive; furthermore, its practicality would be strained because of long-term follow-up problems and because of the short half-life of investigators.

On the other hand, some insight might be gained into the comparative extent of these time lags for different cancers by looking at age-specific secular trends among the 5 major ethnic groupings in Hawaii, and relating them to what is known of the social history of these populations. Such an analysis should be possible using death certificate information. If the methodologic problems were not too severe, the information

gained would provide a useful background for future demographic investigations in the Islands and elsewhere.

Another way of dealing with the time-lag problem is to identify "marker lesions," which carry an increased risk of the later development of a particular cancer but which appear at an earlier age. Some possible examples might be cirrhosis in liver cancer, or polyposis in colon cancer. Possible risk factors should be evaluated both in patients with benign lesions and in cancer cases. That such "marker lesions" are often more common than the actual cancers is an added advantage.

The problems of disentangling multiple variables and of allowing for time lags between casual factors and the appearance of disease are not, of course, peculiar to Hawaii. They are obstacles to any epidemiologic approach to chronic disease. That they can be overcome is demonstrated by past successes in linking radiation and cigarette smoking to cancer. Basic and clinical research may eventually lead to more effective ways of preventing and treating cancer. But at the present time, international differences in incidence of various cancers are among the best indicators that a reduction in cancer morbidity and mortality should be possible. Few settings in the world are more favorable to the investigation of these differences than Hawaii.


## ACKNOWLEDGEMENTS

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NOTE: In this article, the terms Caucasian, white and European are interchangeable.

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## The decade of the eighties in the *Journal*

The *Hawaii Medical Journal*, under the editorial leadership of Fred Reppun MD, achieved its goals in the period between 1980-1990.

Not only did it serve as a valuable means of communication by the Hawaii Medical Association with its members and the community, but it also continued to provide the readers with many informative articles, some of which are not ordinarily available in other medical journals. These articles usually contain something unique to medicine in Hawaii.

Special issues were introduced during this period. Interesting topics such as cancer, environmental toxicology, Hawaii-Japan studies, atherosclerosis, leprosy, recent advances in neurology, endocrinology and infectious diseases were covered in detail, each within a single issue.

The decade of the 1980s was clearly one of technological advancement. It introduced the union of biology and technology, which spawned an industry in the U.S. that grossed an estimated $1.2 billion in 1989 alone. MRI, lithotripsy and a new generation of CT-scans were introduced to Hawaii medicine. The first cases of bone marrow and heart transplantation were reported during this period. Notable recombinant products included alpha and gamma interferons, used against cancer and hepatitis; erythropoietin, the red cell booster to treat anemia; vaccines against HBV. Granulocyte colony stimulating factors, used to improve granulocyte production were developed. Monoclonal antibodies also contributed significantly to the diagnosis and classification of cancer. All these culminated in the 1980s.

The article entitled, *Hereditary Anemias in Hawaii* by Y E Hsia et al, published in Vol 46, No 8 September 1987, exemplified the type of articles seen in the *Journal* in the 1980s. In addition to the readily available electrophoretic procedure, new techniques such as DNA analysis were reported as a way to study a difficult clinical problem commonly seen in Hawaii. The multi-racial patient population that is characteristic of Hawaii required special language brochures and interpreters to conduct the clinical investigation.

All in all, the 1980s was a good period for medicine in our island state. With the infrastructure in place and the continued cooperation among various groups and institutions, we can expect that the 1990s will see more of the same: Rapid progress in bringing new technology to the care of our patients.

James Lumeng MD
Honolulu

*. . . ethnicity is important*

# Hereditary anemias in Hawaii

Y E Hsia BM FRCP DCH*
J A Hardman MD**
R T S Jim MD***
W R Wilkinson MD****
W McKinney MD****
E Alvarez-Pacpaco MD†

* Medical Genetics Services, Department of Genetics and Pediatrics
** Department of Pathology
*** Department of Medicine
**** Department of Pediatrics
† Department of Obstetrics
John A Burns School of Medicine, University of Hawaii

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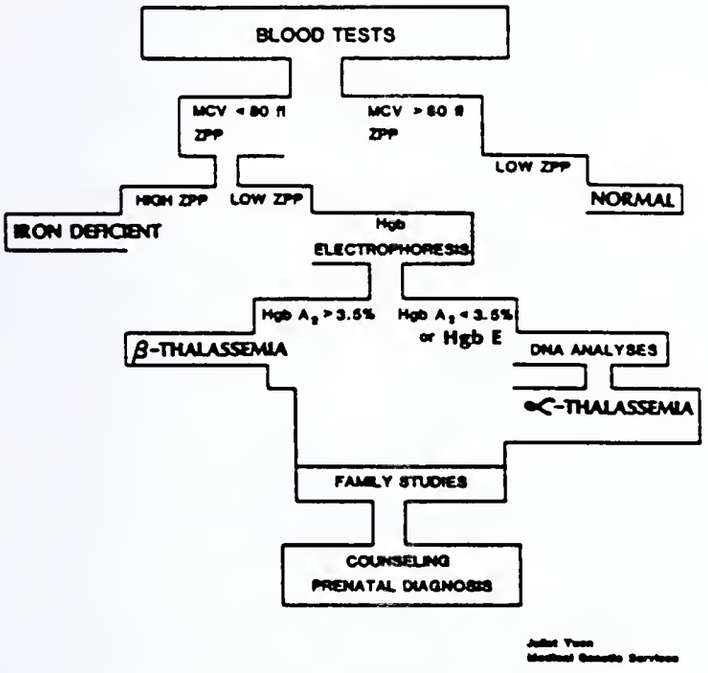
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*The differential diagnosis of microcytic anemias in Hawaii presents special problems because of the hereditary anemias prevalent in its large Asian subpopulations[1-6]. Both the alpha- and beta-thalassemias are important because of morbidity and mortality[1-6]. Heterozygous carriers for either type mimic iron deficiency, which may lead to inappropriate work-up or treatment.*

*The thalassemias and hemoglobin (Hb) variants are all benign in heterozygotes, but if a couple are both heterozygous for the same or for incompatible variants, their children have 25% risk of inheriting a serious anemia. These can be pre-*

## FIGURE 1

SCREENING FOR THE THALASSEMIAS




### TABLE I

**The Normal Hemoglobin Proteins**

| | | | |
|---|---|---|---|
| Embryonic: | Hb | Gower I | $zeta_2/epsilon_2$ |
| | Hb | Gower II | $alpha_2/epsilon_2$ |
| | Hb | Portland | $zeta_2/gamma_2$ |
| Fetal: | Hb | F | $alpha_2/gamma_2$ |
| Adult: | Hb | A | $alpha_2/beta_2$ |
| | Hb | $A_2$ | $alpha_2/delta_2$ |
| | Hb | $A_{1c}$ | glycosylated Hb A |

**Common Abnormal Asian Hemoglobin Proteins**

| | | |
|---|---|---|
| Hb | Barts | $gamma_4$ |
| Hb | H | $beta_4$ |
| Hb | E | $alpha_2/beta^E{}_2$ |
| Hb | Constant Spring | $alpha^{CS}{}_2/beta_2$ |

### TABLE II

**Common Asian Alpha-Thalassemia Genes:**

Normal: $(\alpha\alpha)$
Single Deletion Chromosomes:
$(-\alpha)$
Hb Q: $(-\alpha^Q)$
Hb Constant
Spring $(\alpha\alpha^{CS})$

Double Deletion Chromosomes:
$(--)$

**Some Alpha Thalassemia Gene Combinations:**

Alpha-Thalassemia Deletions: *
Single Gene Deletion Equivalents:
$(-\alpha/\alpha\alpha)$
$(-\alpha^Q/\alpha\alpha)$
$(\alpha\alpha/\alpha\alpha^{CS})$

Double Gene Deletion Equivalents:
$(--/\alpha\alpha)$
$(-\alpha/-\alpha)$
$(-\alpha/-\alpha^Q)$
$(-\alpha/\alpha\alpha^{CS})$

Triple Gene Deletion Equivalents, producing Hemoglobin H Disease:
$(--/-\alpha)$
$(--/-\alpha^Q)$
$(--/\alpha\alpha^{CS})$
$(\alpha\alpha^{CS}/\alpha\alpha^{CS})$

Quadruple Gene Deletion, Hydrops fetalis or Bart's Hemoglobinopathy:
$(--/--)$

* Any of these can be associated with any beta-thalassemia variant.

*(Continued)* ➤

*vented by detecting the heterozygotes[10-12], and by offering genetic counseling and fetal testing[13-14] to couples at risk of having severely affected children.*

*Early detection is also possible by the screening of newborns[2, 3, 8, 15]. Fetal diagnosis, or early detection and treatment, can greatly reduce the consequences of these anemias. Screening and prevention will cost far less than the cost of care for affected patients.*

Homozygous alpha$_1$-thalassemia, Hb Barts hemoglobinopathy, is the commonest cause of lethal hydrops fetalis in Hawaii (Tables I, II); it also produces grave maternal obstetric complications. Nakayama et al[16] reviewed the largest number of cases in the United States and outlined simple strategies for detecting it. Mothers with affected fetuses always have placentomegaly and premature labor; they have polyhydramnios or oligohydramnios, hypertension, abruptio placentae and even heart failure. The fetus develops extreme hydrops and dies in utero or soon after birth.

## Part One
## The problem in general

**The Rationale of Thalassemia Screening.** Heterozygotes are detectable by simple screening tests[5-12]. Diagnoses can often be confirmed by test findings in key relatives, but many cases require more complex investigation.

**The Strategy.** Screening for both alpha- and beta-thalassemias (Figure 1, Tables II, III) can be based on red cell resistance to osmotic fragility in hypotonic glycerol[12], or on microcytic red cell indices (CBC) and abnormal morphology[5-10]. Most heterozygotes have low mean corpuscular volume (MCV < 80) and mean corpuscular hemoglobin (MCH < 23 pg) (Table IV). The reticulocyte count is normal in the mild heterozygotes, but will be raised in the more severe thalassemia syndromes. It is not needed in screening for the thalassemias.

Iron deficiency is unlikely unless the red cell distribution width (RDW), a measure of anisocytosis, is over 15%[17, 18] (Table IV). The beta-thalassemia majors, Hb H diseases and some alpha$_1$-thalassemia heterozygotes, have enough anisocytosis to raise the RDW, but it is normal in most heterozygotes. The red cell zinc protoporphyrin (ZPP), or "free" erythrocyte protophorphyrin (FEP), measureable by simple hematofluorometry, is raised in iron deficiency or lead poisoning[18], but not in the thalassemias[19, 20].

Suspected iron deficiency can be confirmed by low serum ferritin (< 10 mcg/dl), which is cheaper than doing serum iron and iron-binding capacity, or can be diagnosed by therapeutic response to oral iron, which will raise the hematocrit in 2 to 4 weeks in iron-deficiency cases.

**Confirmation by Hemoblobin Electrophoresis.** Hb electrophoresis on cellulose acetate or starch gel at pH 8.6 will separate most normal and variant Hb proteins by characteristic Hb migration rates. The low levels of Hb A$_2$ can only be measured accurately by column chromatography. Citrate agar electrophoresis at pH 6.5 separates Hb F and Hb C better. Rarer variants mimicking common ones can be misdiagnosed if not tested further; unstable variants may be missed if tests are delayed[8, 21].

**TABLE III**

**Hb E and Beta-Thalassemia Minor Variants: ***

| | |
|---|---|
| Normal Genotype: | $Beta^A/Beta^A$ |
| Hb E Heterozygote: | $Beta^A/Beta^E$ |
| Hb E Homozygote: | $Beta^E/Beta^E$ |
| $Beta^+$-Thal-Heterozygote: | $Beta^A/Beta^+$ |
| $Beta^o$-Thal-Heterozygote: | $Beta^A/Beta^o$ |

**Beta-Thalassemia Intermedia or Major Syndromes: ***

| | |
|---|---|
| Beta-Thal Intermedia: | $Beta^+/Beta^+$ |
| Hb E/Beta-Thal: | $Beta^E/Beta^+$ |
| Hb E/Beta-Thal: | $Beta^E/Beta^o$ |
| Beta-Thal-Major: | $Beta^+/Beta^o$ |
| Beta-Thal-Major: | $Beta^o/Beta^o$ |

* Any of these can be associated with any alpha-thalassemia variant.

• Normal Adults versus Infants.

A normal adult has mainly Hb A, with < 3.5% Hb A$_2$ and 1% Hb F (Table IV). At birth, normal-term infants have nearly 50% Hb F and barely any Hb A$_2$; in the first 4 months, Hb F falls and Hb A$_2$ rises to the normal adult ranges[22-24].

*Hb E Homozygotes and Heterozygotes.* The most common beta variant in Asians is Hb E (Table III), which co-migrates with Hb A$_2$ or Hb C on electrophoresis[25-28]. Hb C is common in West Africans, but is not seen in Orientals[7-8].

Hb E or $beta^E$ homozygosity is benign, with a moderate micro-crytic anemia (Table IV). Electrophoresis shows Hb E, some Hb F, but no Hb A at all (any Hb A$_2$ is obscured by the Hb E). Both parents of a person with $beta^E$ homozygosity must be $beta^E$ heterozygotes, children of a homozygote all must inherit the $beta^E$ trait.

$Beta^E$ heterozygosity causes mild microcytic anemia. Hb electrophoresis shows 20% to 40% Hb E co-migrating with Hb A$_2$ (this should not be confused with Hb A$_2$, which only exceeds 15% in beta-thalassemia major)[29]; Hb A is 60% to 80%. Concomitant alpha-thalassemia in a person will lower the Hb E to 15% to 20%.

*The $Beta^{thal}$ Thalassemias, Beta ° and $Beta^+$.*

• Homozygotes: Beta Thalassemias Major and Intermedia.

Homozygotes for a severe beta° thalassemia can make no Hb A at all, only Hb F and Hb A$_2$ (Table III). An affected infant will become severely anemic in a few months as Hb F declines; marked hepatosplenomegaly and erythroid hyperplasia will develop unless aggressive treatment with transfusions keep the hematocrit above 30%[7, 8].

The chelating agent *desferrioximine* will counteract the ill-effects of iron accumulation[8, 30, 31]. Supplements of folate, ascorbate, and B vitamins might help these patients, the use of prophylactic penicillin as for sickle cell disease[32, 33] is not known.

Milder beta$^+$-thalassemia homozygotes make a little Hb A, but may still be transfusion-dependent. The thalassemia intermedias cause a less severe chronic anemia not needing transfusions.

Rare gene deletion delta/beta thalassemias also lack delta genes, and produce no Hb $A_2$. Delta/beta gene fusions produce a Hb *Lepore* (alpha$_2$/lepore$_2$) instead of Hb A and Hb $A_2$. Homozygotes have a thalassemia intermedia. On electrophoresis, Hb Lepore co-migrates with beta, rarer variants migrate elsewhere. Heterozygotes are asymptomatic with very low levels of Hb Lepore[7,8].

• Heterozygotes: Beta-Thalassemia Minor.

The one normal beta gene in beta$^{thal}$ heterozygotes produces enough Hb A to prevent symptoms, but such cases have a mild microcytic anemia with slightly dysmorphic red cells from birth. After early infancy, heterozygotes for most beta$^{thal}$ variants have 3.5% to 10% $A_2$ and 2% to 5% Hb F, more in some variants (Table IV)[7,8].

• Compound Heterozygotes, Beta$^E$/Beta$^{thal}$.

A person inheriting beta$^E$ from one parent and a beta$^{thal}$ from the other makes no normal beta-globin and reduced amounts of Hb E, resulting in a syndrome equivalent to thalassemia major or intermedia. In Southeast Asia, beta$^E$/beta$^{thal}$ is far more prevalent than a homozygous beta$^{thal}$, because beta$^E$ is so common. Transfusions are best avoided if possible; some patients might be kept stable with supplemental folate and B vitamins, good nutrition and prompt treatment of intercurrent illnesses[7,8]. Hereditary Persistence of Hemoglobin F (HPFH). Homozygotes for these entirely benign HPFH variants never switch from gamma-globin to beta-globin production, continuing to produce Hb F thoughout life. On electrophoresis, homozygotes have only Hb F; heterozygotes have nearly as much Hb F as Hb A.

• The Alpha Thalassemias. Alpha$_1$ Thalassemia Homozygotes and Heterozygotes.

Alpha$_1$ (--/--) thalassemia homozygotes lack all of the 4 normal alpha genes ($\alpha\alpha/\alpha\alpha$) on chromosome 16[30] (Table III). Affected fetuses can make no Hb F or Hb A, and develop erythroblastosis *hydrops fetalis*. Electrophoresis shows only the unstable fast Hb Barts, Hb H, embryonic Hb Gower I and Hb Portland. Both parents of an affected fetus must be at least alpha$_1$ (--/$\alpha\alpha$) thalassemia heterozygotes.

Alpha$_1$ (--/$\alpha\alpha$) -thalassemia heterozygotes inherit a double alpha gene deletion (--) from one parent, a normal pair of alpha genes ($\alpha\alpha$) from the other, and have a benign mild microcytic anemia. At birth, heterozygotes have 2% to 5% Hb H and Hb Barts on electrophoresis; after a few months, the only abnormality on routine Hb electrophoresis is marginally low Hb $A_2$[7,8].

• Alpha$_2$ Thalassemia homozygotes and Heterozygotes.

Alpha$_2$ (-$\alpha$/-$\alpha$) -thalassemia homozygotes have 1 normal alpha gene (-$\alpha$) on each chromosome 16. The effect is a mild microcytic anemia, virtually identical to alpha$_1$ (--/$\alpha\alpha$) heterozygosity; newborn infants have 2% to 5% Hb H and Hb Barts. Alpha$_2$-thalassemia heterozygotes (-$\alpha$/$\alpha\alpha$), missing only 1 alpha gene, have hematologic findings overlapping well into the normal range, but traces of Hb H and Hb Barts are seen at birth (Table IV) and their Hb $A_2$ is normal[7,8].

*Hemoglobin H Disease.* Compound heterozygotes for alpha$_1$ and alpha$_2$ (--/-$\alpha$) inherit a double deletion (--) from 1 parent and a single deletion (-$\alpha$) from the other. Affected infants have a microcytic anemia with 20% to 25% Hb H and some Hb Barts.

Affected patients have a thalassemia intermedia syndrome of variable severity; pregnancy may aggravate the anemia.

**TABLE IV**

**Range of Red Cell Indices (2 sd above & below Mean)**
**Preliminary Data from Hawaii Thalassemia Project**

| Diagnosis | [N] | Hb | MCV | MCH | RDW | A2 | ZPP |
|---|---|---|---|---|---|---|---|
| Normal Subjects | 401 | 10.8 - 16.7 | 78.9 - 97.8 | 26.1 - 34.0 | 10.5 - 15.6 | 0.8 - 3.4 | 6.0 - 30.1 |
| Beta-Thalassemia Heterozygotes | 46 | 8.8 - 13.9 | 55.3 - 77.6 | 17.6 - 25.6 | 13.0 - 18.0 | 3.6 - 6.7 | 7.0 - 48.3 |
| Sickle Cell or Hb Q Heterozygotes | 5 | 10.9 - 14.9 | 77.0 - 89.0 | 25.8 - 29.6 | 12.9 - 14.8 | 3.5 - 3.7 | 11.7 - 16.0 |
| Hb E Heterozygotes | 147 | 9.7 - 15.6 | 67.6 - 84.7 | 22.0 - 28.6 | 10.0 - 17.8 | 16.4 - 45.0 | 5.0 - 35.9 |
| Hb E Heterozygotes and Single Alpha Gene Deletion (-$\alpha$/$\alpha\alpha$) | 6 | 10.0 - 15.9 | 65.0 - 90.0 | 21.4 - 31.0 | 11.8 - 16.0 | 20.2 - 41.4 | 7.3 - 30.3 |
| Hb E Homozygotes | 19 | 10.0 - 14.2 | 57.3 - 72.5 | 18.3 - 23.5 | 14.1 - 17.1 | 94.6 - 99.0 | 7.3 - 40.9 |
| Alpha$_2$-Thalassemia Phenotype | 64 | 10.2 - 15.1 | 68.8 - 89.6 | 22.5 - 30.4 | 11.0 - 16.1 | 1.8 - 3.1 | 5.9 - 33.9 |
| Hb H Disease (--/-$\alpha$) | 9 | 8.1 - 12.0 | 50.5 - 68.0 | 11.3 - 29.1 | 12.3 - 27.5 | 0.7 - 2.4 | |
| Iron Deficiency | 10 | 7.6 - 14.5 | 63.0 - 86.5 | 20.1 - 28.9 | 13.4 - 19.9 | 1.5 - 3.0 | 24.3 - 59.5 |
| Iron Deficiency and Alpha-Thalassemia Phenotype | 10 | 7.0 - 12.3 | 48.2 - 72.2 | 15.2 - 23.3 | 12.7 - 23.3 | 1.0 - 3.1 | 5.0 - 95.5 |

*(Continued)* ➤

Electrophoresis of fresh samples shows 5% to 20% Hb H. (The unstable Hb H is easily missed, as it migrates very rapidly and can run off the electrophoretic strip.) Hb $A_2$ is low, 1.5% to 2.5%.

Excess Hb H precipitates as red cell inclusion bodies, detectable by supravital staining. The rare association of Hb H disease with mental retardation is due to a huge DNA deletion on chromosome 16, which extends far beyond the alpha genes[7,8].

*Hemoglobin Constant Spring.* In some Asian populations over 3% have the Constant Spring ($\alpha^{cs}\alpha$) alpha variant[28, 37, 38]. This mutant alpha gene also impairs the synthesis-capability of its neighboring alpha gene. ($\alpha^{cs}\alpha/\alpha^{cs}\alpha$) homozygotes and (--/$\alpha^{cs}\alpha$) compound heterozygotes have the equivalent of Hb H disease. On electrophoresis, Hb CS is present in very low amounts, and migrates slowly, near carbonic anhydrase. Heterozygotes are difficult to detect, as Hb CS is hard to spot[7,8].

*Other Non-Deletion Alpha-Thalassemias.* Some other alpha gene variants synthesize alpha-globin at low efficiency levels, mimicking a single (-$\alpha$) or double (--) deletion. Hb Q, which is always associated with a single alpha gene (-$\alpha^{Q}$), is indistinguishable from Hb S on electrophoresis[7,8].

*Alpha Thalassemia Genes and Beta Clobin Variants.* Criteria for recognizing the mild alpha-thalassemia traits are obscured in beta variants, such as a $beta^{Thal}$ or $beta^{E}$ [29], where an alpha thalassemia heterozygosity may remain unsuspected. The $beta^{Thal}$, $beta^{S}$ or $beta^{E}$ variants all tend to be milder in patients who happen also to have deleted alpha genes, because the alpha- and beta-globin polypeptide levels are less out of balance[7,8].

*Iron Deficiency.* With progressive iron deficiency, red cell ZPP and then RDW rise, Hb, hematocrit, MCV and MCH fall. These help to distinguish iron deficiency from a thalassemia trait. Several formulae have been proposed to discriminate between a thalassemia trait and iron deficiency[39-44]. None reliably differentiates the single or double alpha gene deletions, although some are up to 90% accurate for beta-thalassemia heterozygotes[45].

Since iron deficiency and thalassemia heterozygosity both cause microcytosis, iron deficiency in thalassemia heterozygotes can only be diagnosed by tests such as ZPP or serum ferritin. Similarly, iron deficiency may mask a thalassemia, so possible heterozygotes should be retested after a course of iron treatment. If a patient ever had normocytosis, however, thalassemia heterozygosity is very unlikely. Hb $A_2$ is lowered by iron deficiency, invalidating identification of the thalassemia heterozygotes based on Hb $A_2$ levels.

*Iron Toxicity.* Thalassemic homozygotes and heterozygotes absorb iron more avidly than do normals; long-term iron accumulation may eventually produce hemosiderosis[7,8]. Chelation therapy, therefore, must accompany the repeated transfusions these patients need[30,31].

*Newborn Screening.* Newborn screening for the alpha-thalassemias is worthwhile[2-6] because the presence and the amount of Hb H and Hb Barts reflect the number of functional alpha genes[7,8,15,23]. In the $beta^{thal}$ variants, Hb $A_2$ does not become elevated until age 4 months[22], but in the newborn, Hb A:Hb F ratio is depressed[15]. The number of deleted alpha genes correlate with increasing amounts of Hb Barts in fresh cord blood. Parents and relatives of detected infants should be tested to confirm the diagnoses in families, and to provide genetic counseling for couples at risk.

**Confirmation by Family Studies.** Correct diagnoses may not be possible without doing family studies. The CBC ranges for the different types of thalassemia overlap one another and the normal. Hb electrophoresis cannot resolve some of these dilemmas, so diagnoses in isolated individuals may be missed or be in error. The inherited nature of these traits often allows for clarification as a result of studies done on relatives. For example:

1 — If a child with severe anemia has only Hb E on electrophoresis, he must have $beta^{thal}$/$betha^{E}$ and not homozygous $beta^{E}$, if only one of his parents has $beta^{E}$, while the other is heterozygous for $beta^{thal}$.

2 — If both parents of a child with Hb H disease seem to be missing 2 alpha genes, one parent must have (-$\alpha$/-$\alpha$) and the other (--/$\alpha\alpha$); further family studies may reveal which parent has which.

*Confirmation by DNA Studies.* Modern DNA techniques are powerful tools for detecting gene alterations in the hereditary anemias[8,9,13,14]. As DNA technologies become simplified, they will be increasingly practical for clinical use and population screening[46-48]. Single (-$\alpha$/$\alpha\alpha$) deletions are detectable, suspected double alpha deletions can be defined as being (--/$\alpha\alpha$) or (-$\alpha$/-$\alpha$), but standard DNA analyses may still miss non-deletion alpha-thalassemias such as Hb CS.

Human DNA can be extracted from leukocytes, amniocytes or any other nucleated cells. The globin genes can be analyzed by probing with a labeled alpha or zeta gene, or in a particular DNA segment after the genomic DNA has been digested with appropriate restriction endonucleases[8,9].

• Technical Problems in DNA Analyses.

Although simple in concept, the procedures demand meticulous technical skills. Subtle band-size differences may be hard to spot; inaccurate digests or plasmid contaminants may produce spurious bands. Polymorphic variants can obscure some variants. Alpha and zeta gene triplication occur in Southeast Asia, as do zeta gene deletions[17,49]. Non-deletion alpha variants such as Hb CS may escape detection.

**Ante-Natal Screening and Fetal Diagnosis.** All pregnant Southeast Asian women with non-iron deficient microcytosis should have their husbands tested for microcytosis[11,16]. Family histories, and screening of relatives, may help to identify pregnancies at risk for inherited anemias. Obstetric ultrasound can detect placentomegaly and the other manifestations of fetal hydrops in mid-trimester.

Because DNA can be analyzed from any nucleated cell, fetal diagnosis can be done on amniotic or chorionic villi cells.

## Part Two: The Hawaii Hereditary Anemia Project

Medical Genetic Services (MGS) had conducted a pilot study on newborn and family screening[50] and now has a federal grant to screen the ethnic populations in Hawaii for hereditary anemias. The diagrammed strategies (Figure 1) are being applied in order to screen families and couples at risk for serious anemias. Genetic counseling and fetal diagnoses are being offered to participants[45,50,51].

All participants are briefed on the thalassemias and are

offered free tests for CBC and red cell ZPP. Specimens with microcytosis or dysmorphic red cells are subjected to Hb electrophoresis. Blood is also taken for DNA analysis; a laboratory has been started here to look for deleted and non-deleted alpha variants.

The Lao population in Hawaii was screened first, as it is known to have exceptionally high frequency for these anemias. The study, however, also includes Filipinos and Southern Chinese, who are also at risk for these traits. Special language brochures and ethnic interpreters have helped to recruit, educate, and counsel those people whose primary language is not English.

The project goals are to: (1) develop better criteria for diagnosing the hereditary anemias; (2) establish a DNA laboratory in Hawaii for clinical diagnoses; (3) determine gene frequencies to predict prevalences for these anemias wherever these populations appear; (4) offer genetic counseling and fetal testing for couples at-risk. The study is also being extended to include the G6PD deficiencies. Funding is being sought for a pilot trial of newborn screening for the thalassemias in order to develop more simple, reliable and less costly mass-screening techniques than are currently being used.

### Preliminary results

So far, over 900 subjects have been tested, including 500 Laotians, 100 Chinese and 200 Filipinos. Alpha gene DNA has been analyzed in over 50 subjects. Fetal diagnoses have been offered to 8 couples at risk via Dr H Kazazian's laboratory at Johns Hopkins University. Hb E was found in 160, apparent Hb S in 5, probable alpha-thalassemia in 120, beta-thalassemia in 50. Table IV presents the preliminary CBC ranges (from 2 sd below, to 2 sd above the mean) in selected diagnostic categories, demonstrating the high overlap among these groups[45,46].

### Coordinating with local physicians

Medical community support is critical for the successful operation of this screening project. Knowledgeable physicians can help to ensure that families and pregnancies at risk are recognized and should be referred for testing. Prompt results with accurate interpretations and beneficial genetic counseling should lead to the referral of more patients to this study.

### Summary

The hereditary anemias have a high prevalence among Southern Chinese, Filipinos and Laotians who reside in Hawaii. Although heterozygotes are asymptomatic, if both parents are heterozygous, the children of that union may well develop serious inherited anemias.

Heterozygotes can be detected if one has an index of suspicion and scrutinizes routine complete blood counts for microcytosis. Parents at risk then can be evaluated further by a thorough study of all the available relatives in a family. However, specific confirmation is difficult unless DNA analysis can be done.

The federally funded Thalassemia Screening Project in Hawaii is set up to determine the true incidence of these anemias among these Southeast Asian subpopulations. Essential to the accuracy of the findings is the setting up of a DNA analysis laboratory to differentiate between the alpha-thalassemia variants. This is because the red cell indices show a great deal of overlap and because the Hb electrophoresis data may not be specific enough to be diagnostic. The project is attempting to refine these diagnostic criteria.

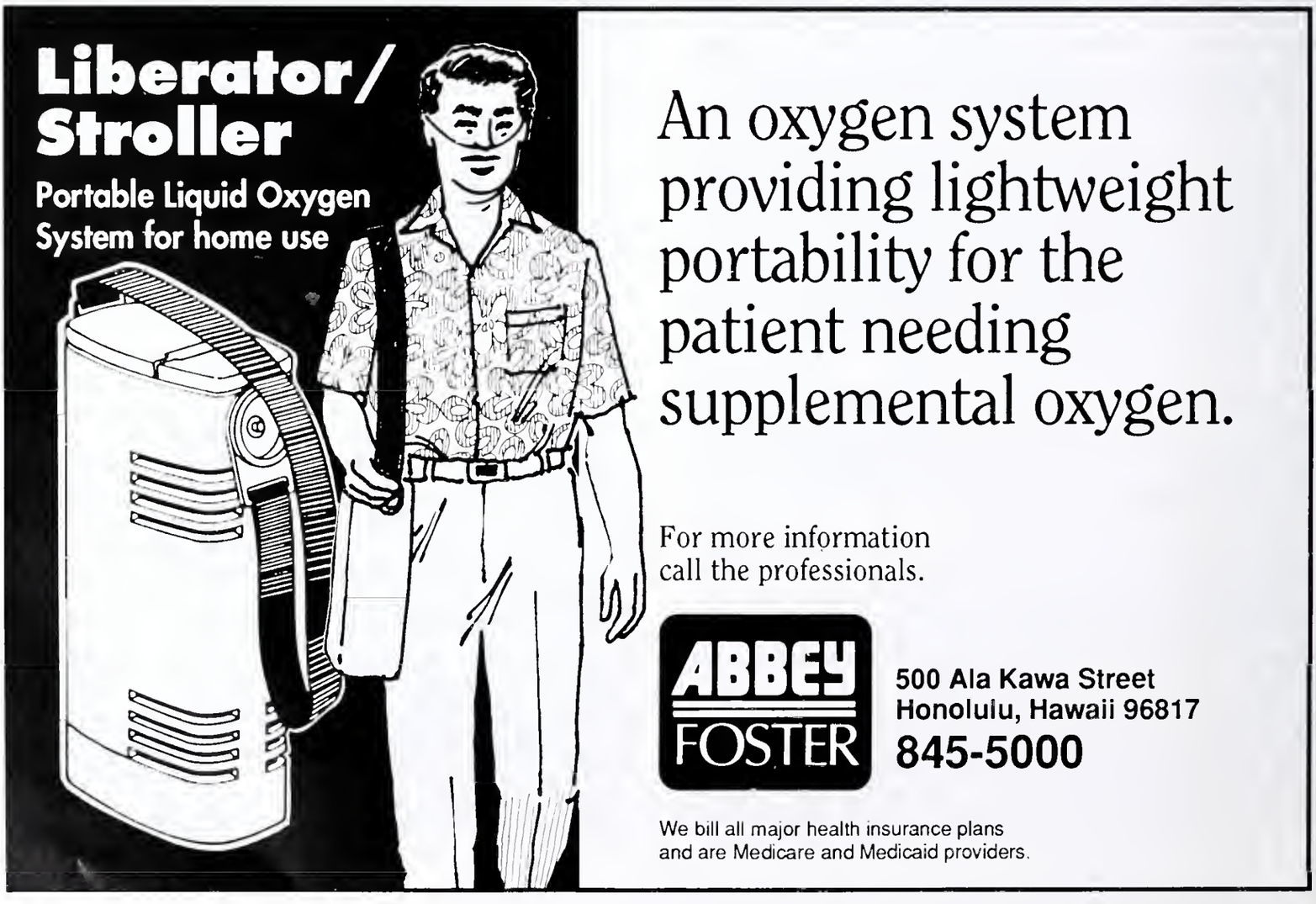
Those couples then definitely at risk can be given genctic counseling. For a pregnancy at risk, fetal DNA analysis can be offered .

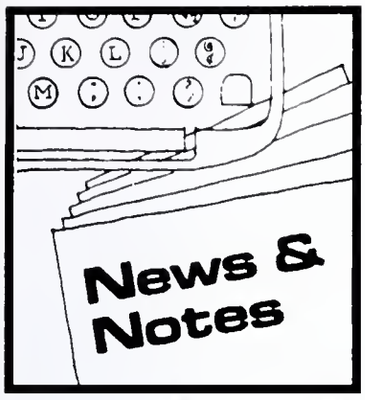
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Henry N. Yokoyama MD

## Life in These Parts

*DISTILLED WISDOM:* "Twelve Things to Remember" (From that marvelous little pamphlet, the *Robins Reader* Spring/Summer 1990)

1. The value of time
2. The neeessity of perseverance
3. The satisfaction of working
4. The dignity of simplicity
5. The worth of character
6. The power of kindness
7. The influence of example
8. The obligation of duty
9. The wisdom of economy
10. The virtue of patience
11. The gift of our body
12. The joy of creating

* * *

*LETTER TO THE EDITOR* - Advertiser April 27: "It is my considered opinion that the old gray mayor ain't what he used to be. The time has come for him to gracefully move on. The easiest way to achieve this is to kick him upstairs. So I hereby suggest an election campaign fund be started with the objective, "Fasi for Governor."

That should appeal to his colossal ego and get rid of him and his appointees once and for all." [Friend or foe?/Ed.]

David Rodwell MD

* * *

Winifred Odo, State Medicaid administrator (with tongue in cheek) said, "We've been very fortunate in Hawaii realizing how very generous private physicians have been in their willingness to accept Medicaid patients. They aren't even breaking even." The State Legislature generously raised Medicaid fees from 56% to 60% in April.

* * *

Kaiser Permanente will open a $4 million clinic in the Mililani Town Center in December. The new facility will be staffed by 10 physicians and cover 15,000 square feet. Kaiser already operates a 5,000-square-foot clinic with 5 physicians at the Mililani Shopping Center.

* * *

April was Cancer Awareness Month and Saint Francis Medical Center's Institute of Cancer had established a "Can Cancer" drive; employees, neighbors and friends brought in aluminum cans for recycling. The program was instigated by oncologist Clayton Chong MD.

* * *

*SHIP:* Hawaii is the first state to offer a health

*(Continued)* ➤

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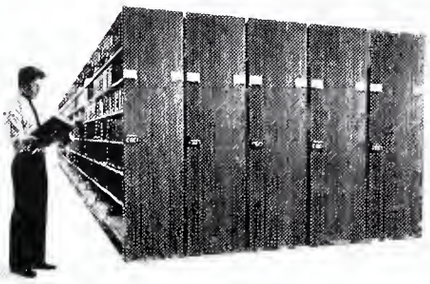
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insuranee program to the "gap group" whieh ineludes the unemployed, part-time employees and their dependents. John Lewin, State Health Direetor, started the program and reported that 13,000 residents were enrolled to date. About 600 or 6% who applied for SHIP were rejeeted beeause they were eligible for other insuranee or made too mueh money. About half of those enrolled were 18 and under; 2/3 were below the poverty line (ie $7,224/yr). The patients pay $5 per visit and a monthly fee based on ineome. The maximum SHIP fee for a family is $160 a month (eompared to the $220 and $260 monthly premiums of other earriers). SHIP eovers 12 office visits a year, preventive serviees and 5 days of hospitalization, but not medieines or dental work. The members get eare from Kaiser and HMSA partieipating physieians. The State has set aside a $10-million budget that eould serve 17,000 residents. The State reimburses a elinie $15 for enrolling a member, $35 for doctor visits and $75 for an initial health assessment.

* * *

*From West Hawaii:* Waimea physieian W.A. Shrader with the Big Island Center for Allergy and Environmental Medicine feels there is no elear-eut evidence that herbieide spraying of country roads and parks has any impaet on health, but at least 3 patients see him regularly and they believe their ailments are herbieide related. W.A. feels that only 30% of the herbieide sprayed reaehes the target and the remaining 70% travels elsewhere. . .

## Hors de Combat

Internist Gloria Madamba was working late one afternoon after everyone had left. A seraggly hyperkinetic stranger walked in and mistook Gloria for the receptionist. "Where's the doetor. I want to see the doetor right now!" he demanded. Gloria was shaken but maintained her cool: "The doctor is gone for the day," she announeed. The man glared at her with fierce penetrating eyes, muttered something and left. And Gloria let out a sigh of relief. . .

(As related by Myron Shirasu)

## Every Bit Helps

In May, President Bush proposed to Congress a) a $250,000 cap on non-economic damages to the vietim in malpractice eases; b) a ehange in eourt praetices that sometimes allows a malpraetice vietim to colleet twice for the same ineident; c) allows awards for future eosts to be paid in installments; and d) set up an alternative dispute mechanism through whieh vietims eould settle their elaims . . .

## Professional Moves

We apologize for the following announeements we missed.

*FEBRUARY:* OB-Gyn Gordon Ontai relocated to Queen's POB II, Suite 201 and internist John Houk to Queen's POB II, Suite 308. John Cogan, Joana Magno and Lee Guertly relocated their Honolulu offiee for interventional eardiology to Queen's POB II, Suite 707.

*APRIL:* Gynecologie oncologist Keith Terada relocated to Queen's POB II, Suite 803 and urologists Williain Yarbrough, Gary Lattimer and David Kuehenbecker to Queen's POB II, Suite 602. Cardiologist Danelo Canete relocated to St. Franeis Medical Bldg, Suite 305 and to St Franeis West Medieal Plaza. On Kauai, pediatrician Allen Alejandro (who speaks Ilocano, Tagalog and Spanish) started at the Garden Island Group Ine's at Eleele and Waimea.

*JUNE:* Radiologist Allen Johnson joined the Kauai Medieal Group. William Yarbrough, Gary Lattimer and David Kuehenbeeker opened Island Urology-Kapiolani at Kapiolani Medieal Center Physicians Tower, Suite 920.

## Elected, Appointed & Honored

*NEWSMAKERS:* The *Star-Bulletin* Newsmaker for Deeember was Straub oneologist Reginald Ho. Reginald is the first Hawaii physieian to chair a national eommittee for the American Cancer Society, but his real fame came when his son Reggie was plaee kicker for Notre Dame's 1988 national championship football team . . .

David McEwan, chief of family medieine at the Honolulu Medical Group, reeeived the Allan F. Saunders Award from the American Civil Liberties Union of Hawaii at the annual dinner April 28 at the Ilikai Pacific Ballroom. David is a pioneer in treating AIDS patients in Hawaii and is eo-founder of the Life Foundation and the Community Consortium of AIDS Physieians . . .

Kim Thorburn, corrections health eare direetor, who has been aetive in Amnesty International sinee 1982, has been elected to the board of direetors of Amnesty International, USA. Amnesty International has 700,000 members in 150 countries and is a 30-year-old human-rights organization which seeks the release of prisoners of eonscience worldwide who have not advoeated or praeticed violenee. It opposes torture and death penalties and ealls for fair and speedy trials for political prisoners . . .

The *Star-Bulletin* Newsmaker for January was Honolulu pediatrician Calvin Sia who was reeently awarded a certifieate of merit for children's advoeaey by Contemporary Pediatrics. Cal was honored for helping make Hawaii first in child abuse prevention, pediatric emergeney services and comprehensive child health planning . . .

## Obituaries in Brief

John Chalmers, former deputy direetor of the State Department of Health, died January 23 in Monterey, CA, at age 71 . . .

Kaiser physician Ulana Knihynycka, age 48, died June 2 in a tragic pedestrian traffic aecident on a Waialae-Kahala sidewalk . . .

Retired surgeon Stanley Saiki died May 2 in Arlington, VA, at age 73 . . .

## Miscellany

The town church needed painting. A painting eontractor submitted the low bid and got the contraet. Too late. He had badly underestimated. To avoid heavy losses, he used more and more thinner. All went well, and he had just put the finishing touches to the steeple, when a eloud burst washed all the paint off. A flash of lightning, a elap of thunder followed by a heavenly voice which commanded: "Repent! Repent! Stop your sinning."

(As told by Roger Brault)

## Entrepreneurs

Twelve years ago, Honolulu urologist Andy Morgan purchased an 8-acre pareel near the Coast Guard Station west of Hawi and leased it to his

daughter and son-in-law, Christi and David Barclay, who have established a successful aquaculture farm raising Chinese catfish. . .

## Miscellany

*TODAY'S THOUGHT* by Reverend Paul Osumi — *Looking for a burglar:* One night, a husband was awakened by his wife who whispered that she heard a burglar downstairs. Sleepily, he went down to find himself looking into the muzzle of a gun. The burglar ordered, "Hands up! Hand over your valuables." After complying, the man said, "Please do me a favor before you go. Come upstairs to meet my wife. She has been looking for you every night for 20 years." Things we dread do not happen often.

(Submitted by HMA secretary Marilyn Lindsey)

* * *

The town drunk went a-strolling and strayed into the graveyard on the outskirts of town. He fell into an open grave and decided to spend the night. He sobered at the crack of dawn and scrambled up to the rim. Looking around and seeing no one around, he muttered to himself: "This must be Judgment Day, and I am the first one here."

(As told by Betty Anderson, our favorite contributor)

## Conference Notes

"New Developments in the Evaluation and Management of Syncope" (Friday morning QMC/UH lecture by visiting professor Mark Estes, III from Tufts)

*Syncope:* Loss of consciousness and complete recovery within a few minutes. Classification: *Cardiac* and *Non-Cardiac*.

A. *Cardiac Syncope* may be mechanical and electrical.

B. *Non-Cardiac Syncope* may be neurologic, metabolic/Endocrine, and psychiatric. Cardiac syncope causes include valvular; idiopathic hypertrophic subaortic stenosis; atrial myxoma; pulmonary hypertension, etc. Pharcologic causes include vasodilators; beta blockers; diuretics; nitrates; ealeium channel blockers; quinidine, etc.

*HX Clues:* a) *cardiac syncope:* abrupt onset without premonitory symptoms. Precipitated by antiarrhythmies, phenothiazine, trieyclic antidepressants, b) *Neurally mediated syncope:* related to meals, anxiety, dehydration, posture, hunger, crowds, etc., preceded by premonitory sx's and sy's, c) *Carotid Sinus syncope:* aggravated by methyldopa, beta blockers, digoxin, d) *Seizures:* Recovery followed by drowsiness and confusion.

*Diagnostic Evaluation:* Hx and PE. Hx: ppt factors, PE; orthostatic BP, carotid sinus massage. Cardiac or Neurologic origin: a) Tilt table test; b) sereening with Holter and loop monitors; c) ECHO; and d) EP study.

*Holter Monitor in Syncope:* 69%: absenee of arrhythmia; 13%: arrhythmia without syncope.

*Loop Recorder:* Continuous recording of rhythm up to a month . . . diagnostic yield over 25% . . . freezes heart rhythm with syneope.

*Neurally Mediated Syncope:* Related to environmental stimuli . . . produces dizziness, epigastric distress and nausea.

*Vaso-vagal Syncope:* Variations include eough syncope; post-exertional syncope; glossopharyngeal syncope; deglutination syneope; post-pran-

*(Continued)* ➤


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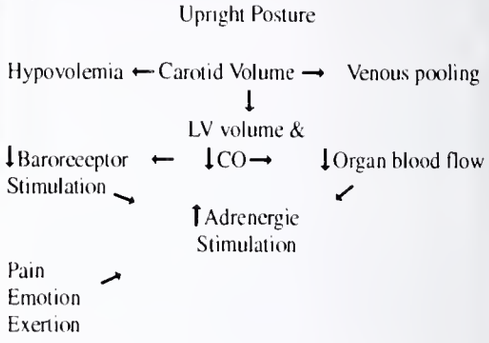
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## NEWS AND NOTES

*(Continued from page 343)*

eial syncope; mieturation syncope; ete.

Pathophysiology of Neurally Mediated Syncope:

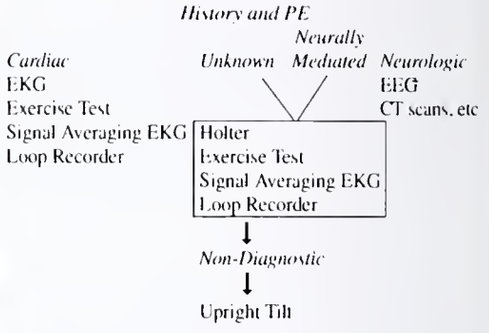



*Upright Tilt Testing:* Diagnostie tool for assessing neurally mediated syncope.

*Responses to Head-Up Tilt:* a) Neurally mediated syncope, b) Dysautonomic syneope, e) psyehosomatic syncope

*EP Testing:* 60% abnormal esp SV (supraventrieular); VT (ventrieular tachycardia); and bradhyeardia. Selecting patients for EP Testing: tachy arrhythmias (Pts with known heart disease; PVCs; non-sustained VT on Holter) and bradyeardias (1° AV block; BBB; and sinus bradyeardia).

Summary: Evaluation Syneope




## Miscellany

Mrs G walked into a lawyer's office and told him she wanted to divoree her husband of 58 years.

"Mrs G, 58 years is a long time. Do you really have any grounds?"

"Grounds? No grounds. We live in a condominium."

"No, no. Do you have a eause? For example, did he beat you up?"

"Beat me up? I'm up by 6 and the lazy bum is still sleeping."

"I mean, do you have a grudge?"

"Sure, we have a garage. It's robbery what they charge for parking in the garage."

The frustrated lawyer: "Mrs G, I have to know why you want a divorce."

"Oh, why didn't you say so" seoffed Mrs G. "I'm siek of Mr G telling me we don't eommunieate."

(As told by John Howitt, our favorite DISTA rep)

## Conference Notes

"Aeute Renal Failure - Conserving Renal Funetion" - leeture on July 12 by Wadi Suki, visiting professor from Baylor College at QMC/UH medical eonferenee.

*Acute Renal Failure:* acute reduction in renal function viz 24 hr urine volume less than 400 ml or creatine clearance of less than 5ml/hr.

*Classification:* A. *Prerenal:* Decreased renal blood flow (RBF). B. *Postrenal:* Obstruction. C. *Renal:* Parenchymal insult.

*Types:* 1. *Oliguric:* Less than 500 ml/24 hr; less than 20ml/hr
2. *Non-oliguric*

A. *Prerenal:* 1. Volume Depletion: a. hemorrhage; b. GI losses; c. Third spacing; d. diuretics
2. Cardiac Dysfunction: a. CHF; b. MI; c. Pericardial tamponade; d. Pulmonary embolus
3. Vasodilation: a. Sepsis; b. Vasodilators
4. Renal Vasoconstriction: a. anesthesia; b. surgery; c. hepatorenal syndrome
5. Renal Vascular Occlusion: emboli, thrombi, aortic dissection

*Suggestive factors in renal artery emboli or dissecting aneurysm: a. Flank or chest pain; b. Solitary kidney; c. Evidence emboli elsewhere; d. Absent peripheral pulse. Do renal arteriogram if suspect.

| | *Prerenal* | *Renal* |
|---|---|---|
| Urine osmolarity | >500 | <350 |
| Urine Na | <20 | >40 |

B. *Postrenal Azotemia:* obstruction
1. Ureteral obstruction
2. Bladder Outlet Obstruction
3. Urethral obstruction
4. Intrarenal obstruction: a. calcium oxalate; b. MTX; c. Myeloma, pancreatic Ca; d. Uric acid; e. Acyclovir

C. *Renal Azotemia*
1. Hemodynamic insult
2. Major vascular disease
3. Microvascular disease
4. Glomerular disease
5. Interstitial disease
6. Nephrotoxins
a. NSAID, b. heavy metals, c. organic solvents, d. radio-contrast dyes, e. pesticides, f. fungicides, g. antibiotics, eg aminoglycosides, cephalo-sporins, amphotericin

*Current "in" hypothesis re pathogenesis of acute ischemic nephropathy: Generalized renal ischemia secondary to excess arteriolar vasoconstriction

*Acute Tubular Necrosis:*
1. Biochemical changes: Daily increase in BUN viz 10 or less = mild catabolic state; 10 - 30 = moderately catabolic state; 30 or more = severe catabolic state.
2. Prevention: a. Hyperexpansion of high risk surgical cases
b. Alkaline-mannitol diuresis of patients or hemodialysis
c. Mannitol early in oliguric states
d. Use of low dose Dopamine in patients with sick heart
e. Calcium Channel Blockers (when anticipating malfunction)
3 major attributes:
A. renal vasodilation
B. diuretic — increase salt excretion
C. prevents intracellular release of calcium

*Management of Acute Renal Failure*
A. Oliguric Patient (75% of cases)
1. Prevent/treat volume overload
2. Prevent/treat electrolyte disorders (ie Na, K, Mg)
3. Prevent/treat acid-base disorders
4. Prevent drug toxicity/renal, systemic; adjust drug dose
5. Nutritional support
6. Prevent nosocomial infections

*Nutritional support: a. calories; b. essential amino acids; c. low nitrogen; d. vitamins/minerals; e. buffer.

B. Non-Oliguric Patients (25% of cases)
1. Replace urinary losses
2. Same as for oliguric patients

*Diuretics for Acute Renal Failure (Furosemide): 2/3 = no response; 1/3 = diuresis

Furosemide can cause nerve deafness. Furosemide and aminoglycosides have additive effect in autotoxicity. Use of diuretics shows significant reduction in number of patients needing dialysis, but overall, mortality is the same. "I can't see reason for using furosemide to increase urine output."

*Infection Prophylaxis during ARF:

Urinary infection: routine catheterization = 78% infection; without routine catheterization = 35% infection; overall frequency = 44.5%

*Higher incidence of hypertension in ARF patients:
a. Controlling BP results in less kidney dysfunction: Use ACE inhibitors and calcium channel blockers
b. Restrict protein intake ie less protein results in greater GFT.

SUMMARY: ARF is potentially fatal . . . mean mortality rate ie 55 to 60% in US.

It is important to treat postrenal failure vigorously.

*In elderly, diabetics and patients with decreased renal function, give Verapamil 120mg or nifedipine 20mg at night and repeat in am before dye procedure.

## Miscellany

There was a young lady from France
Who decided to take a chance
For an hour or so
She let herself go
Now all her sisters are aunts . . .

(Contrihuted by Clay Benham, our tennis pro)

* * *

An ENT and a general surgeon were bragging about their surgical skills. The ENT declared, "I can out cut you anytime." He got a ladder and climbed up to an owl sleeping on a tree. In 30 minutes flat, he had done a laryngectomy. The surgeon, not to be outdone, took the same owl and completed a colectomy within 15 minutes. He then returned the sleeping owl to its roost.

The next night, the owl was warning a fellow owl: "See that tree. Stay away from it. I woke up the other night and couldn't *shit a hoot*, or *hoot a shit*."

(As told by Wilfred Miyahira
to MSD rep Claire Nakatsuka)


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Aloha United Way

# Maka O Ka Kauka

Russell T. Stodd MD

**Numbers are symbols for things; the number and the thing are not the same.**

All of us have become accustomed to the PRO looking over our shoulders, challenging our diagnoses, requiring documentation, rejecting claims, down-coding the numbers, but always remaining faceless. The AMA is urging the government to erase the anonymity granted to reviewers by HCFA. All the AMA delegates are asking is that HCFA should require PROs to publish annually the names of physician reviewers, their credentials and specialties. Also, reviewers should sign the letters submitted to physicians under review. Because quality assurance is now a way of life for practicing physicians, HCFA should develop and carry out QA for its reviewers.

**In general, the art of government consists in taking as much money as possible from one group of citizens to give to the other.**

By this date, unless you were on sabbatical, you will have heard from HOS President John Drouilhet, AMA and HMA; and will have contacted our Congressional delegation and the Health Care Financing Administration in the hope of derailing the reimbursement program scheduled for Medicare, beginning in January 1992. Grasping whimsically from a misguided, murky, malevolent actuarial miasma, Gail Wilensky's number nabobs fashioned a conversion factor for the RBRVS which averages out as a 16% reduction in reimbursement. All of medicine got bashed, but ophthalmology was thrashed, squashed, trod upon and sprayed with toxic chemicals! The reduction spirals down to 35% for eye surgeons by 1996. If this latest HCFA strategy prevails, the inescapable result will be a reduction in access to care for Medicare patients.

**Experience varies directly with equipment ruined.**

In what may (or may not) be an important finding, Dr Albert Milauskas of Palm Springs, California, reported in a letter to the Archives of Ophthalmology that some silicone intraocular lens implants were turning brown. At the time of his writing, a common denominator had not been established. If the observation is verifiable as an inherent silicone property, foldable lenses will be jeopardized as a safe, long-term implantable device. Meanwhile, polymethylmethacrylate (PMMA) continues to be a safe, effective, durable, proven material. And as is known, the value of foldable lenses as a superior surgical technique remains theoretical, so why subject patients to a possible risk? Marketing, perhaps?

**There is no distinctly native American criminal class except Congress.**

The day that the average American stops working to pay taxes and starts working for his or her family is called Tax Freedom Day. In 1929, that day was February 9. By 1950, the day had advanced to April 3. This year on national average the day was May 8, although states vary. In New York (worst case) the date was May 26, while in Mississippi it was April 24. Hawaii no doubt is close to New York. On average, 2 hours and 49 minutes of every 8-hour workday is spent working to pay taxes. Meanwhile, Congress has voted itself a hefty $23,000 pay increase, and in addition is planning a 20% increase in congressional "operating budget." Congress already spends a cool $1 billion per year on its own expenses. In 1961, 535 voting members of Congress employed a total 5,800 office staff aides, now the 535 members employ 14,757 supporting staff. While the U.S. population has increased 28% in that period, congressional staff size has increased 300%. The Medicare budget is being wantonly slashed, air traffic controllers are being reduced in pay, and military personnel and facilities are reduced to obtain "budget neutrality." But, it is obvious that budget neutrality is for others and not for our elected Washingtonians. The real question for all of us is, why do we keep reelecting them?

**The truth is rarely pure, and never simple.**

In Virginia, a 22-year-old gas station attendant was shot and killed in a robbery. Tests taken at the time failed to reveal the presence of AIDS and vital organs were donated and transplanted. Subsequently, 3 recipients of vascular organs died from AIDS, and it was determined that the young man was indeed HIV-positive. However, so far, the patients who received the corneas, remain HIV-negative. This brings to 10 the number of known cases of inadvertent transplantation of corneas from HIV-positive patients that have slipped through the eye bank cracks. However, there are no known cases of recipients of such corneas who have seroconverted for antibodies against HIV.

**Those who are most moral are farthest from the problem.**

Senator Jesse Helms, the flannelmouth, Bible-thumping Baptist from North Carolina, wants to lock up health care workers who are HIV-positive and continue to perform invasive medical procedures without revealing that condition to patients. The Senate, afraid to challenge his fatuous grandstanding, ratified the resolution. All this despite the fact that there has been no documented transmission of HIV from a doctor of medicine, and only the dentist in Florida as a health care worker who has infected 5 of his patients. On the other side of the coin, more than 40 health care workers have contracted AIDS from patients. The problem remains. Every physician who reveals that he is HIV-positive is immediately ostracized and professionally dead. The AMA and the CDC have made parallel specific recommendations for HIV-positive doctors and other health personnel, but the infected patient is still anonymous and able to refuse testing.

**It is completely unimportant. That is why it is so interesting.**

In a notorious case, an Iowa optometrist had his female patients disrobe for their "eye examinations." The point is not that there is a weird optometrist practicing in Iowa, but that it was necessary for the state attorney general's office to force the optometric board to discipline the errant optometrist. In Minnesota, a physician testifying before a state senate committee, used this fact to rebut the optometric board's claim that few complaints are ever filed. "No wonder there are few complaints when licensing boards fail to respond."

**Addenda —**

— If you like your passport photo, in all probability you need the trip.

— And then there was the little lady who had her tubes tied so she wouldn't have any more grandchildren.

— Among adolescents and young adults, basketball causes more eye injuries than any other sport.

Aloha, and keep the faith.
rts




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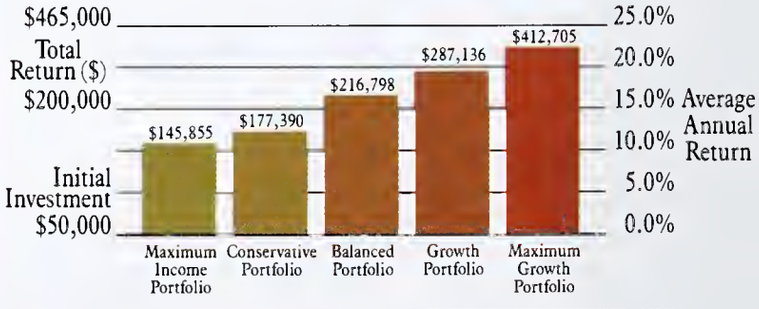
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# HAWAII MEDICAL JOURNAL

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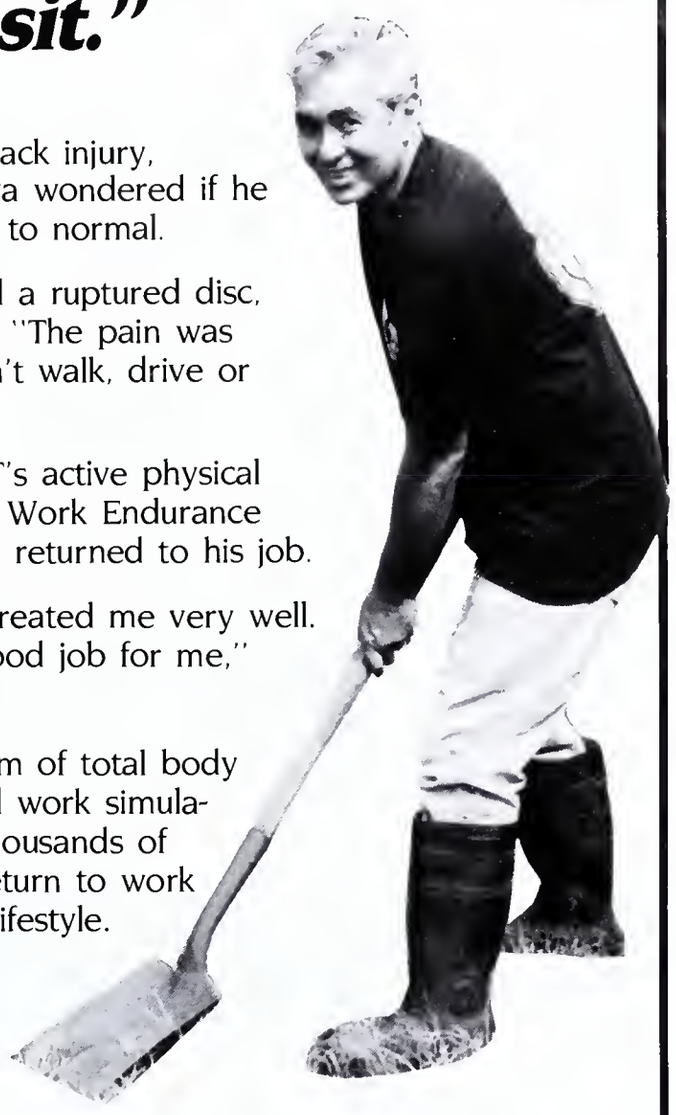
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# *Hawaii Medical Journal* Annual Report 1990-1991

As of this writing (August 1991), the *Journal* has been published 12 times this past HMA-year.

We have included a total of 25 scientifie artieles, 9 of them in 1 special issue on Toxicology in March under the issue editorship of Steve Moser. We have about 10 manuscripts waiting to be published when spaee is available.

The *Journal* has featured several artieles on medieal soeio-economie issues; as well as editorials on: The Cruzan ease and Living Wills; AMA President John Ring's address to the HMA House of Delegates (HoD) in 1990; several on health care issues; a couple on the Medical School, 1 on the issue of dispensing or prescribing generic versus brand-name drugs and 1 authored by the HMA Auxiliary.

The 1990 HMA/HoD mandated the publishing of highlights of its deliberations; this was done in the November issue. We were also mandated to publish highlights of the Counеil meetings, but this has been no easy task beeause of deadlines. The September 1990 issue contained 1, then 1 in January 1991, 2 in April, 1 eaeh in May through August. We hope the flow will eontinue uninterrupted as the proeess beeomes streamlined. Counеilor Denis Fu from Maui has eomplemented the omissions and insertions by submitting his "Council Capers."

Steady eontributors have been Henry Yokoyama's "News & Notes" and Russ Stodd's "Maka o ka Kauka" (The Eyes of the Ophthalmologist).

Projeeted CME programs have occurred at proper intervals. Reports of HMA Committee meetings have been sparse — for laek of member reporters! "OTED" (Over The Editor's Desk) gleanings and gems by Kalani Brady, taken from the mass of literature pouring into the HMA office constantly, were helpful in filling editorial interstiees, but have fallen off the seeond half of the year. It is not a very stimulating task, and Kalani is to be exeused because it is also thankless, and we hope he won't give it up.

The Marketplace is attracting more and more attention by the profession as the powers-that-be exert more pressure on the praetiee of medieine, distracting busy physieians as they try to do well by their patients. We hope that future issues of the *Journal* will not over-refleet this concern.

We miss "The President's Page" and the monthly hortatory message from our State Direetor of Health. We hope Franeis Fukunaga will submit more of his pathologieal vignettes than he has of late. We couldn't possibly survive without Henry's "News & Notes". We hope Denis Fu will continue his gentle barbs and tongue-in-eheek, objective "Capers".

Most of all, we are trying to stick to the format established by our distinguished founder, Harry Arnold Jr: That the articles be as mueh as possible by loeal authors, reporting on local medical matters and researeh or ease reports. Oeeasionally, only occasionally, will we include an outstanding piece by a medieal big-wig from abroad.

We are restrieted in space, which is totally a function of how much advertising our mueh appreeiated publisher Steve Lent ean rustle up each month, and we are proud that HMA's finaneial pieture reflects the faet that the tail is still wagging the dog, ie, the *HMJ* is in the blaek again thanks to Steve.

A final word: The September issue of the *Journal* celebrates its 50th anniversary. It will be a special issue, and we'll have a party at the Hawaii Medieal Library on the 6th of that month. Our great staff: Beeky Kendro, Jan Estioko and Daisy Canite are in the throes of designing and implementing both the issue and the party.

J.I. Frederick Reppun MD
Editor

# Highlights of the HMA Council Meetings

## August 2, 1991

PRESENT: Drs J. MeDonnell, S. Wallaeh, A. Don, J. Chang, J. Kim, A. Kunimoto, C. Kam, R. Stodd, R. Ando, F. Holsehuh, C. Wong, L. Magnussen, M. Joshi, R. Laird, R. Lee-Ching, P. Blanchette, H.H. Chun, P. DeMare, J. Spangler, H.K.W. Chinn, H. Fong, M. Shirasu, E. Bade, R. Goodale, D. Fu, H. Perey, T. Smith, J. Lumeng, and W. Dang. Also present were V. Woo - Legal Counsel, Neil Kaneshiro, medieal student, and guest Dr S. Berman. HMA staff present were: J. Won, N. Jones, B. Kendro, J. Asato, J. Estioko, L. Tong, P. Kawamoto, and M. Lindsey - recording secretary.

Medieal Director Bernard Fong, of Aetna Medieare Hawaii, spoke before the Council and announced that the recent write-in is well worth the effort and Washington and Congressional delegates do listen. Dr Fong stated the Medicare cuts for Hawaii will not be as drastie a eut for participating members as expected. The revised HCFA elaim form 1500 is another hassle faetor that will increase upfront billing responsibility passed on to provider and consumer; it will be implemented soon.

The HMA request for grass-roots write-ins against the reduetion in the Medicare conversion factor was suceessful; all Council members wrote letters and over 500 letters from members, and possibly more, were mailed before the August 4 deadline.

Our AMA delegates recently returned from the AMA Annual Meeting in Chieago and reported all 5 of the resolutions from Hawaii were approved by the AMA House of Delegates.

• Resolution 97 on the Philip Morris Bill of Rights Tour was plaeed on the eonsent ealendar and adopted by the AMA House of Delegates.

• Resolution 98 on Expert Witness Guidelines was adopted as amended reeommending a joint effort between the AMA and ABA to adopt the guidelines in the AMA "Model Legislative Guidelines on Expert Witnesses."

• Resolution 124 on Clinieal Dependency Intervention was adopted in concept. However, since work is already underway by the CPT editorial panel, it was recommended that a substitute resolve be adopted, namely that the AMA and the CPT Editorial Panel continue to revise and clarify the publication of CPT to reflect aeeurate reporting by physieians.

• Resolution 125 on Category-2 Requirements for the Physicians Reeognition Award was reeommended for referral to the Board of Trustees for elarifieation and to permit broader study. The Board is to report to House of Delegates during the 1992 Annual Meeting.

• Resolution 192 on HCFA Reimbursement for Autologous Blood Transfusions was adopted and amended to encourage all insurers to fully reimburse hospitals and blood banks for the expenses involved in the proeess.

• Board of Trustees of AMA ratified Resolution 148 sponsored by HMA to expedite delivery of JAMA and AMNews to subscribers in Hawaii, Alaska, Guam, and Puerto Rico. This will greatly improve delivery time by Express Mail.

The HMA will host the 1992 Distinguished Medical Reporting Awards Banquet on November 15, 1991 and the proeeeds will go to the Hawaii Medieal Library's Charles S. Judd Jr. MD Foundation. A roast of sportseaster, Les Keiter, will be featured.

Steven Berman, member of HMA, presented his concerns about the publie image of physieians and reeommended hiring a professional PR firm to improve that image. The Council referred this recommendation to the Publie Relations Committee for consideration.

Councilor Theresa Smith described SHPDA activities on the Big Island with trends toward universal health care. The Council approved some form of representation and monitoring of SHPDA aetivities so that the HMA and the medieal eommunity points of view are also presented if sueh plans materialize.

AIDS — the Council opposes AIDS amendments by Senator Helms that require mandatory testing, criminal penalties or license revocation against health-care workers. The Council also endorsed the letter to Senator Akaka by the HMA Young Physicians Section opposing these amendments. The Council approved Centers for Disease Control (CDC) recommendations for preventing the transmission of Human Immunodeficiency Virus and Hepatitis virus to patients during exposure-prone invasive procedures. It accepted and approved recommendations from the HMA AIDS subcommittee to develop guidelines for the State on exposure-prone procedures, and to provide information brochures on HIV-related topics to educate physicians. In addition, it referred to the Physician Health Committee the problem of setting up mechanisms to assist and advise physicians infected with these viruses.

Environmental Health — the Council approved a letter from the HMA Environmental Health Committee to Governor Waihee and John Lewin MD, Director of Health, regarding prevention of further exposure to TCP, a carcinogen in potable water.

The Council reaffirmed the HMA Mission Statement as a part of the HMA/CME reaccreditation process:

- PURPOSE
  1. To represent the medical profession
  2. To provide information related to medicine
  3. To establish and maintain standards of professional conduct and performance
  4. To participate in the evaluation and maintenance of standards for medical education

- MISSION
  1. To preserve high standards of quality of care
  2. To assist physicians in responding to the changing medical practice environment
  3. To strengthen relationships within the medical community
  4. To increase membership by recruiting new members and retaining existing members
  5. To define and communicate health policy
  6. To collect, analyze, and disseminate information on matters that concern the practice of medicine
  7. To assure the viability and future of the Hawaii Medical Association

The Council accepted the slate of nominees for elective offices for 1992 to be elected at the 135th Annual House of Delegates meeting as presented by the Nominating Committee.

Andrew Don MD
HMA Secretary

## September 13, 1991

PRESENT: Drs J. McDonnell, S. Wallach, A. Don, J. Chang, C. Kam, R. Ando, F. Holschuh, L. Magnussen, L. Sakai, R. Lee-Ching, P. DeMare, M. Dung, J. Spangler, H. Fong, M. Shirasu, E. Bade, R. Goodale, D. Fu, H. Percy, T. Smith, W. Dang, A. Kunimoto, F. Reppun, S. Levine and medical students T. Kim, L. Pascua, and L. Kurata. HMA staff present were: J. Won, N. Jones, J. Asato, P. Kawamoto, J. Estioko, and M. Lindsey - recording secretary.

HMA President John T. McDonnell MD reported that he had been informed by the AMA reports (a) that HCFA will eliminate the tripling effect but will continue to push the "behavioral offset" in the conversion factors of the proposed Medicare Fee Schedule; (b) that the AMA continues to support the CDC position regarding the AIDS issue. As of September 1991, there has been no evidence of transmission of the HIV virus from a medical doctor to a patient. The AMA is against any precipitous action by Congress in the absence of any evidence that patients have been exposed to HIV by their physicians; (c) that Medicare claim forms will require that physicians record their Unique Physician Identification Number (UPIN) in the near future and that the alphabetical physician code number will be phased out; and (d) that HCFA requires completion of the information form by all physicians concerning any sponsorship of, or participating agreement with, clinical laboratories, by September 30.

The Council approved the Finance Committee report, including a $40 increase in dues for 1992.

The Council approved a request by the Hawaii Psychiatric Medical Association that the first week in October be proclaimed as "Mental Illness Awareness Week" and the month of May as "Mental Health Month."

The Council approved a letter to be written to third party payers (HMSA, HDS) to have payment to providers reflect the gross excise tax on the eligible portion and not on the initial charges.

The Council approved payment of a subscription to broadcast the KGU/Country Doctor Program from September 1, 1991 to November 24, 1991 in the amount of $780. No further renewal beyond that time will be made unless it is supported by the Public Relations Committee.

The Council approved $150 to be granted to the HMA-Medical Student Section for its projected activities.

The Council approved a letter supporting the Waianae Coast Comprehensive Health Center's request for continuing Federal funding.

The Council supported the Drug and Kids Project in which doctor/lawyer teams will visit 5th and 6th graders to discuss medical and legal effects of drug abuse.

Andrew Don, MD
HMA Secretary




# Impingement

An imposing list of prestigious physicians, researchers and their staff at the Pacific In-vitro Fertilization Institute at KMCWC have given us a report in this issue of the *Journal* on the results of the first 100 conceptions and their outcomes.

As an aside, but rather significant to the practice of medicine in this day and age, is the implication by the authors of the effect on the incidence of complications by extra-professional forces that now work on medical practice.

Infertility is a real and saddening problem for couples who desire to have and to raise children. Despite the worldwide concern with overpopulation to which we are subjected in all the media, particularly lately as we watch the large families of starving Kurds, Ethiopians and Sudanese on television, in this country there are many childless couples who would love to have at least one or two progeny. The new technology offers them hope. However, as the reader may determine, the complications arise as a direct function of multiple births.

The impingement by market forces on medical practice is exemplified in this instance by the rules promulgated by medical insurance carriers. Coverage is allowed for only one pass-through, ie one attempt at in-vitro fertilization. A second try is not covered; it is, undoubtedly, an expensive medical procedure.

Is it any wonder, then, that OB-GYN specialists, ever mindful of the patients' pocketbooks, as all physicians are, or should be, try to implant several embryos at one time, in hopes that at least one will "take?" Multiple births, with their unknown adverse consequences, cannot be avoided.

J.I. Frederick Reppun MD
Editor

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# The Hawaii Medical Fellowship Mission to China*

Bradley D. Wong MD

*The Hawaii Medical Fellowship Foundation is a non-profit Hawaii corporation to provide and exchange medical fellowship, knowledge, care, cooperation and service, and to support other humanitarian causes here in Hawaii and abroad.*

*The Foundation plans a mission to China in October 1991. Hawaii physicians, at their own expense and time, will be spending a week in Shantou, China, providing medical service to and sharing techniques with their Chinese counterparts.*

*The Foundation also plans to establish scholarships for students in Hawaii who wish to pursue health careers and to establish clinic/health fairs for the immigrants. It is willing to entertain ideas and suggestions for additional projects.*

In October, a multi-specialty group of physicians and nurses will be traveling to the city of Shantou, in southern mainland China. The destination will be the city's Central Hospital and the Women and Children's Hospital.

There are 3 goals of the group: 1) To demonstrate and teach some western medical and surgical procedures; 2) to learn the techniques of the Chinese physicians; and 3) to donate some needed medical equipment to them.

Shantou is a port city in a special economic zone just 45 minutes by jet north of Hong Kong. It was known as Swatow before the Communist revolution. This city of 800,000 people has 3 hospitals. A scouting party of 4 Hawaii doctors toured the hospitals just 2 months ago.

Central Hospital has 600 beds and is the major community medical center. The facility is clean but old. The overcrowded hallways are lined with cots occupied by patients. There is no air conditioning; the windows are always open. The wards are packed with 6 to 8 patients to a room; 2 beds abut in the middle; there are no partitions and thus no privacy. Families attend the patients, feeding them and emptying the bed pans. Surprisingly, the odors are not bad.

The operating rooms similarly are old, but clean. Two operations are done in each of the 9 rooms. This is a busy OR; 30 procedures are done a day. The equipment is operative, but antiquated. Few items are discarded: syringes, needles, and iv tubing are being reused.

Southern China is known for a high incidence of esophageal and nasopharyngeal cancers. One or 2 esophagectomies are done each week. Hepatic stones are also common; 5 to 8 cases are done per week. The surgeons work without the help of intra-operative cholangiography or choledoscopy. Nearly all abdominal operations are done under epidural anesthesia, and nearly all thyroidectomies are done using acupuncture alone for analgesia. This is a technique we might well want to learn!

Cataracts are being removed, but there are no quality intraocular lenses to implant. The ophthalmologists are eager to learn the technique but need a source for lenses. The Japan-built laser has been broken and unrepaired for 3 years; there is no vitrectomy machine, which means retinal detachments cannot be treated optimally.

Rheumatic fever in children goes virtually untreated and results in crippling valvular heart disease. A 3-year-old Sarns heart/lung machine allows 10 to 12 open heart, valve cases to be done each year. This is quite an accomplishment, considering that there is no surgical ICU.

In fact, the medical intensive care unit of 9 beds does not have the equipment that Hawaii's hospitals have as a standard for a ward bed. There is one EKG machine in the unit (broken at the time of our visit) and only one cardiac monitor. They have no capabilities for any invasive monitoring such as Swan-Ganz catheters, central and arterial lines. They have no pulse oximeters.

Obstetrical care at General Hospital is primitive. There is only one fetal-heart monitor; this is used only for high-risk deliveries. There are no warmers for the newborns, who are taken with their mothers expeditiously to the wards.

The conditions we saw in Shantou's hospitals might be shocking to one accustomed to the high-tech and clean-sheet practice of medicine here in Hawaii. The city government does not have the capital with which to purchase all that is desired. Wages are low for the hard-working staff (about $60 a month for both nurses and doctors). Yet the facilities are well maintained; the staff members are cheerful and competent. They have achieved a high quality of medical care despite scant resources.

So, who make up this group from Hawaii traveling to Shantou? The Hawaii Medical Fellowship Foundation began 6 months ago as a non-profit organization. The physician specialties include OB-GYN, urology, ophthalmology, plastic surgery, general surgery, anesthesiology, cardiology and internal medicine. Nurses will come from the OR and surgical wards of Hawaii hospitals.

A fund-raising dinner was held the first week of September. Part of the proceeds will go toward the purchase of equipment ranging from pulse oximeters to fetal monitors, to infant

*(Continued on page 364)* ➤

* 1060 Bishop Street, 4th Floor
Honolulu, Hawaii 96813

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# Birth of the first 100 babies in Hawaii after conception in-vitro: Experience at the Pacific In-Vitro Fertilization Institute

Thomas Huang Jr PhD*†
Philip McNamee MD*†
Thomas Kosasa MD*†
Jana Silva BA†
Ralph W. Hale MD†
Francis Terada MD*†
Benton Chun MD*†
Carl Morton MD*†

*This paper reports on the first 100 infants delivered consecutively the result of 63 pregnancies after conception in-vitro at the Pacific In-Vitro Fertilization (IVF) Institute. These pregnancies were established prior to the introduction of embryo-cryopreservation into the program. Ninety-seven percent (97%) of singleton pregnancies delivered after 36 weeks; only 5/31 (16%) required tocolytic therapy. The overall multiple gestation rate was 51%, higher than in many other IVF centers. Maternal complications and neonatal morbidity were associated primarily with these multiple gestations. Forty-one percent (41%) delivered in < 36 weeks, and tocolytics were administered in 22/27 (81%) of twin and 5/5 (100%) of triplet gestations. Neonatal morbidity was noted in 39 infants (33 from multiple gestations); 28 neonates were admitted to the intensive care unit (27 from multiple gestations). Nine births had or developed minor abnormalities (hernias, pyloric stenosis). One case of Trisomy 21, and one infant death at 11 months occurred in the group. The caesarean section rate for all IVF deliveries was 65%. It is concluded that IVF is clearly established in Hawaii for infertility refractory to other methods of treatment. The risk associated with IVF stem from the possibility of multiple gestations, not whether the pregnancy was initiated in-vitro. In the future, embryo cryopreservation may help to reduce the risk of multiple pregnancy.*

* Pacific In-Vitro Fertilization Institute, Suite 525
† Department of Obstetrics and Gynecology, University of Hawaii John A. Burns School of Medicine
Kapiolani Medical Center for Women and Children
1319 Punahou St., Honolulu, Hawaii 96826

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## Introduction

Human In-Vitro Fertilization is now a well-accepted treatment for infertility due to tubal blockage, endometriosis, male factor, immunologic and idiopathic causes[1,2]. IVF has been offered in Hawaii since 1985 at the Pacific In-Vitro Fertilization Institute at Kapiolani Medical Center for Women and Children, and most health insurers in the State will provide coverage for at least one complete treatment cycle.

Since the first IVF birth in Hawaii in December 1985, more than 100 babies have been delivered (through July 1990). The overall clinical pregnancy rate at the Institute is high, compared to other programs in the United States[10], but an evaluation of the course of pregnancy and the delivery is also vital in evaluating the efficacy of this rapidly changing technology. This paper retrospectively summarizes data on the course of these first 100 IVF deliveries.

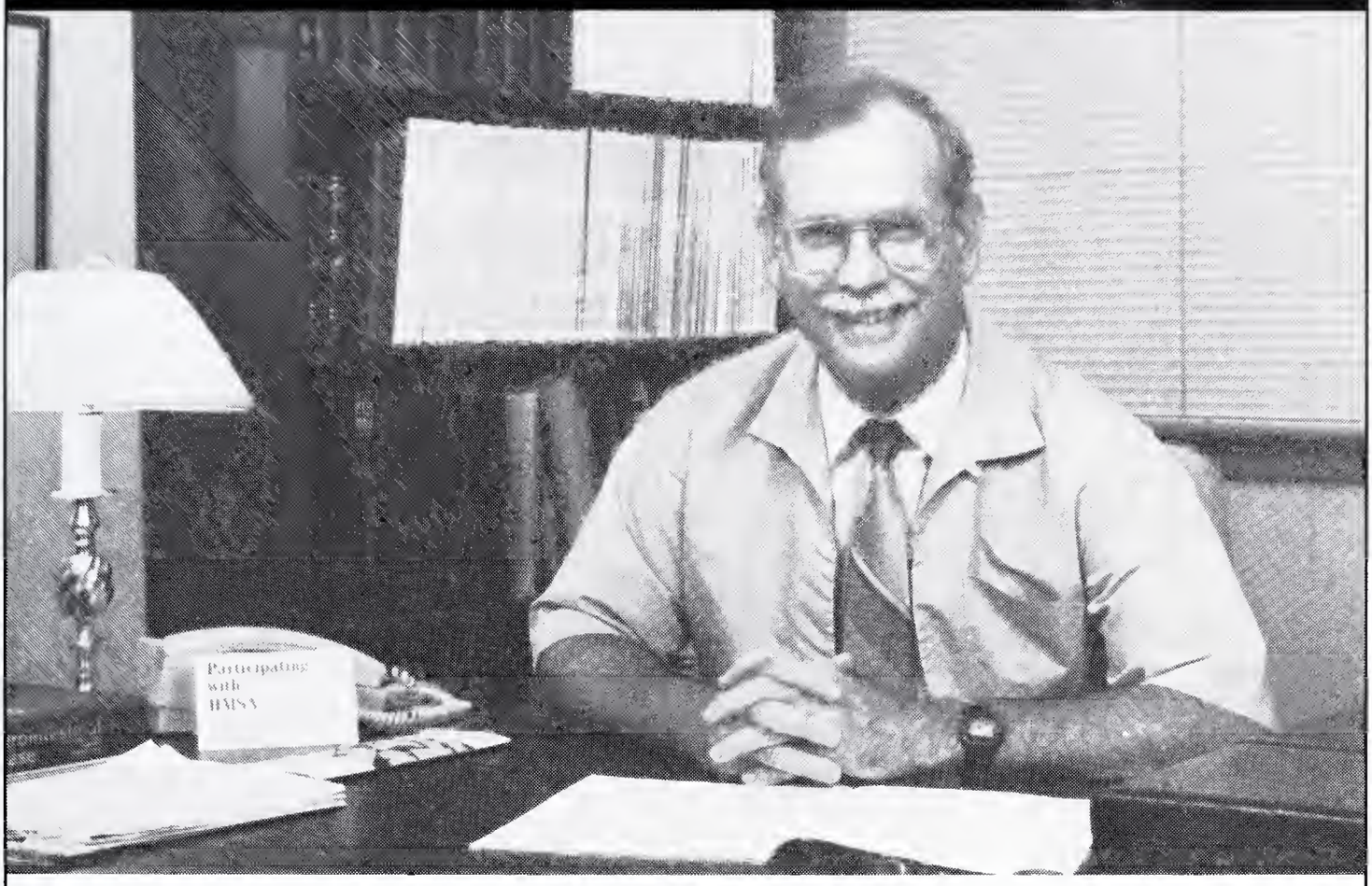
## Patients and methods

Data on pregnancy, labor, and delivery and neonatal outcome were obtained from the treatment charts on the first 100 sequential IVF babies born. The average maternal age was 34 years (25-42 yrs). The mean duration of infertility was 6 years. Forty-seven (75%) patients had never delivered a viable fetus prior to IVF and 23 (37%) had never become pregnant.

Induction of ovulation was performed by controlled ovarian hyperstimulation with human menopausal gonadotropin (HMG), beginning either on cycle day 2 or following GnRH agonist (leuprolide acetate) suppression beginning on cycle day 21[4]. Oocytes were harvested either laparoscopically or, since November 1987, routinely while utilizing transvaginal

*(Continued)* ➤

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ultrasonography, as an outpatient procedure. Oocytes were inseminated 4 to 20 hours after retrieval, and transfer of several of the embryos into the uterus was done typically at the 4-cell stage, approximately 48 hours after egg retrieval. Subsequent, early, quantitative HCG tests and real-time ultrasound at 6 weeks confirmed clinical pregnancy. Prenatal care was then carried out by the patient's private obstetrician.

TABLE 1
**Infants Delivered**

| | |
|---|---|
| Singleton | 31 |
| Twin | 27 |
| Triplet | 5 |
| Male | 54 |
| Female | 46 |

100 infants from 63 deliveries

TABLE 2
**Causes of Infertility**

| | |
|---|---|
| Tubal Factor | 31 (49%) |
| Anovulation | 7 (11%) |
| Endometriosis | 6 (10%) |
| Male Factor | 4 (6%) |
| Unexplained | 3 (5%) |
| Multiple Factors (*) | 12 (19%) |

* including antisperm antibody in several patients

**Results**

Between December 1985 and July 1990, 100 infants were born in 63 deliveries (Table 1). Multiple gestations accounted for 32/63 (51%) of total pregnancies (27 twins and 5 triplets). The sex ratio was unremarkable (54 males, 46 females). The primary cause of infertility in this cohort had been a tubal factor; other less frequent causes included anovulation, endometriosis, male factor, immunological, and unexplained infertility (Table 2) .

Most of the IVF pregnancies (78%) ended with delivery after 36 weeks (Table 3), including 97% of singletons and 59% of the multiple gestations. Of the 14 births occurring prematurely, eg <36 weeks, 13 were multiple. This comprised 41% of all multiple gestations. In the case of twins and triplets, the average gestational ages were 35 and 31. 5 weeks respectively. These exhibited a wide range of gestational ages, twins: 21 to 39 wks; triplets: 23 to 36 wks.

Maternal complications included preterm labor, gestational diabetes, active herpes infection, pregnancy-induced hypertension, and premature rupture of the membranes (Table 4) . The

TABLE 3
**Duration of Gestation**

| Weeks | Total (n=63) | Singleton (n=31) | Multiple (*) (n=32) |
|---|---|---|---|
| < 28 | 2 (3%) | 0 (0%) | 2 (6%) |
| 28-31 | 5 (8%) | 0 (0%) | 5 (16%) |
| 32-35 | 7 (11%) | 1 (3%) | 6 (19%) |
| > = 36 | 49 (78%) | 30 (97%) | 19 (59%) |

* mean gestational ages of 35 and 31.5 weeks for twins and triplets.

TABLE 4
**Maternal Complications During Pregnancy**

| | Total (n=63) | Singleton (n=31) | Twins (n=27) | Triplets (n=5) |
|---|---|---|---|---|
| Tocolytics required in | 32 (51%) | 5 (16%) | 22 (81%) | 5 (100%) |
| Gestational Diabetes | 7 (8%) | 2 (6%) | 4 (15%) | 1 (20%) |
| Pregnancy-Induced Hypertension | 5 (8%) | 0 (0%) | 4 (15%) | 1 (20%) |
| Premature Rupture of Membranes | 4 (6%) | 0 (0%) | 3 (11%) | 1 (20%) |
| Active Herpes Infection | 2 (3%) | 2 (6%) | 0 (0%) | 0 (0%) |
| First Trimester Vaginal Bleeding | 23 (37%) | ND | ND | ND |
| Postpartum morbidity* | 11 (19%) | ND | ND | ND |

* includes maternal fever and use of antibiotics; anemia requiring transfusion; transient renal insufficiency.

ND - not determined

latter two occurred only in the multiple pregnancy group. Only 5/31 (16%) of singletons required tocolytic therapy, compared to 22/27 (81%) in twins and 5/5 (100%) in triplets.

Multiple gestation with abnormal presentation was a major reason for the overall caesarean section rate of 65% (Table 5). The caesarean rate for twins and triplets was 89% and 80%, respectively.

Neonatal morbidity was documented in the case of 39 infants that were born (Table 6). Twenty-eight neonates were admitted to the neonatal intensive care unit at Kapiolani Medical Center, almost all the result of multiple births.

The reasons for extended hospitalization included severe prematurity, difficulty in feeding, respiratory problems, the need for antibiotics or hyperbilirubinemia. Two neonatal deaths occurred, one at 23 weeks in a triplet pregnancy and one at 24 weeks in a twin pregnancy. Additionally, 2 cases of intrauterine fetal demise took place, one at 21 weeks in a twin pregnancy, and one at 31 weeks in a triplet pregnancy associated with pregnancy-induced hypertension. Subsequently, one infant died at 11 months of age.

A summary of developmental abnormalities appears in Table 7. Minor abnormalities were observed in 9 (9%) of infants. This included 7 hernias and 2 cases of pyloric stenosis. Seven out of the total occured in multiple gestations. One case of Trisomy 21 developed in a triplet pregnancy.

TABLE 5
**Indications for Caesarean Sections***

| | |
|---|---|
| Multiple gestation with abnormal presentation | 18 |
| Cephalopelvic disproportion | 5 |
| Placenta previa | 4 |
| Single pregnancy with abnormal presentation | 3 |
| Abruptio placentae | 2 |
| Active herpes infection | 2 |
| Fetal distress | 2 |
| Chorioamnionitis | 1 |
| Severe pregnancy-induced hypertension | 1 |
| Elective | 3 |

* number of cases. Total n = 41 (65% of cases)

TABLE 6
**Neonatal Morbidity and Mortality**

| | |
|---|---|
| Neonatal morbidity* | 39 (39%) |
| Singletons | 6 (6%) |
| Multiples | 33 (33%) |
| Admission to neonatal intensive care unit | 28 (29%) |
| Singletons | 1 (1%) |
| Multiples | 27 (27%) |
| Neonatal mortality | 2 (0%) |
| Infant mortality | 1 (1%) |

* causes include severe prematurity, difficulty in feeding, respiratory problems, use of antibiotics and severe hyperbilirubinemia.

** at 11 months of age.

TABLE 7
**Infant Abnormalities**

| | |
|---|---|
| Minor: | |
| hernia | 7 |
| pyloric stenosis | 2 |
| Major: | |
| Trisomy 21 | 1 |

## Discussion

Since the birth of the first IVF baby in 1978, human in-vitro fertilization has become an ethically and medically accepted treatment for infertility due to tubal disease, endometriosis, male factor, ovulatory dysfunction, immunological infertility and for unexplained causes[1,2]. Data presented here analyze retrospectively the outcomes in the first 100 IVF babies in Hawaii from the Pacific In-Vitro Fertilization Institute at Kapiolani Medical Center for Women and Children.

The multiple pregnancy rate of 51% reported here is higher than the range of 12 to 35% reported in other programs[5,9,11]. IVF clinical pregnancy rates upwards of 25%[2] only are achieved when several embryos are simultaneously transferred. Consequently, this increases the chances for multiple gestations[5,6,7] which, in turn, are associated with a higher incidence of maternal and fetal complications[8]. The high rate of multiple gestations in our series is probably due to transferring an average of more than 3 embryos at a time. This strategy evolved in response to the one-time-only insurance benefit allowed by most insurers in the State of Hawaii, combined with the lack of embryo-cryopreservation at this stage of the program's development.

At the Pacific IVF Institute, couples are counseled extensively regarding the risks and options, and they participate actively in the choice of the number of embryos at transfer.

Since January 1990, embryo cryopreservation has been offered at the Institute. This may significantly reduce the rate of multiple pregnancies. However, since worldwide experience has shown that a minimum of 3 embryos are required to optimize even singleton pregnancy rates in fresh transfer cycles[7], the risk of multiple pregnancy will probably continue until non-invasive methods of assessing embryo potential are developed. Until then, systematic identification of other factors pre-

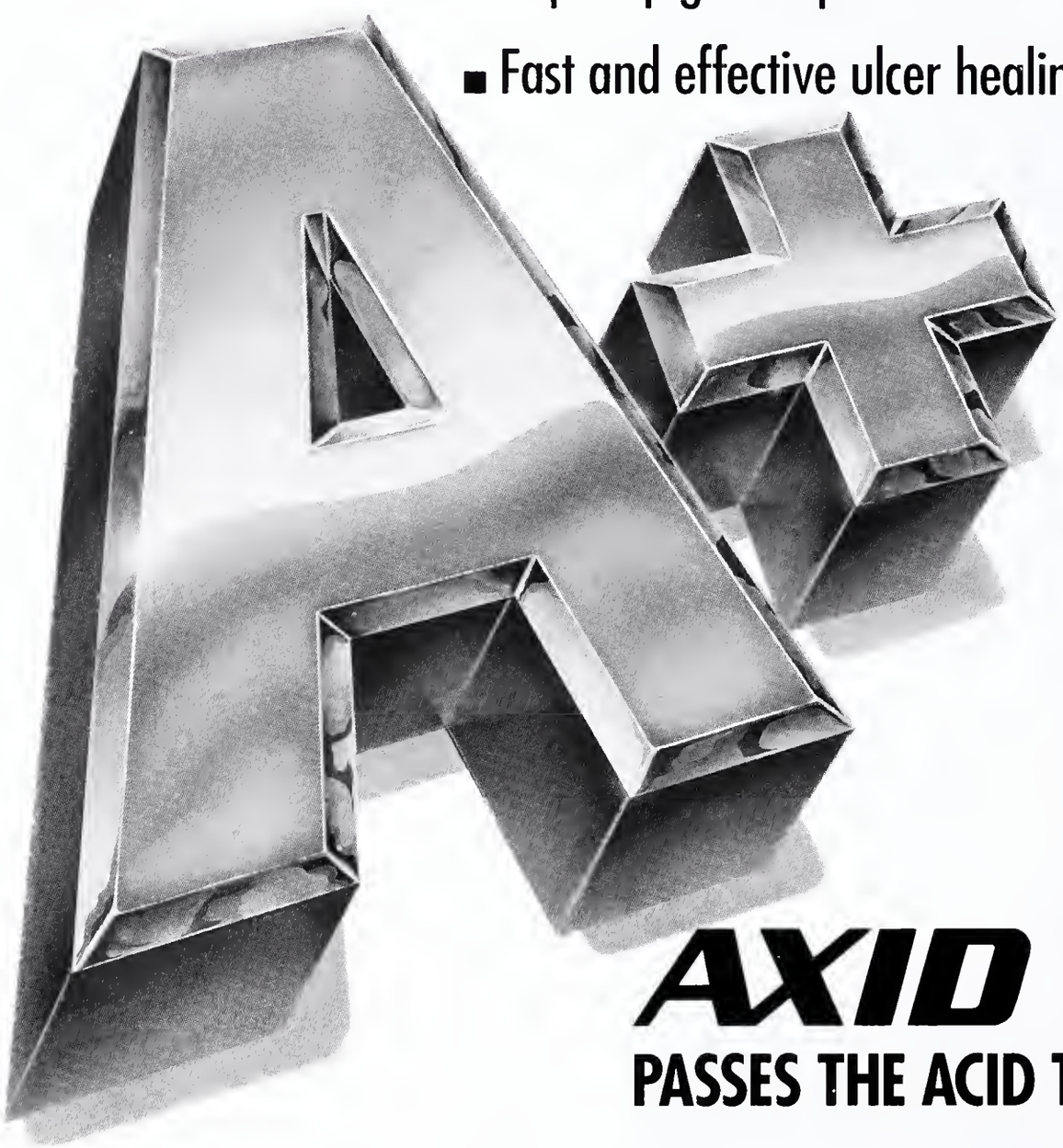
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**Indications and Usage**: 1. *Active duodenal ulcer* – for up to 8 weeks of treatment. Most patients heal within 4 weeks.

2. *Maintenance therapy* – for healed duodenal ulcer patients at a reduced dosage of 150 mg h.s. The consequences of therapy with Axid for longer than 1 year are not known.

**Contraindications**: Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, $H_2$-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other $H_2$-receptor antagonists.

**Precautions**: *General* – 1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

*Laboratory Tests* – False-positive tests for urobilinogen with Multistix® may occur during therapy.

*Drug Interactions* – No interactions have been observed with theophylline, chlordiazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system, therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

*Carcinogenesis, Mutagenesis, Impairment of Fertility* – A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

*Pregnancy – Teratogenic Effects – Pregnancy Category C* – Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect; but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

*Nursing Mothers* – Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

*Pediatric Use* – Safety and effectiveness in children have not been established.

*Use in Elderly Patients* – Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions**: Clinical trials of varying durations included almost 5,000 patients. Among the more common adverse events in domestic placebo-controlled trials of over 1,900 nizatidine patients and over 1,300 on placebo, sweating (1% vs 0.2%), urticaria (0.5% vs <0.01%), and somnolence (2.4% vs 1.3%) were significantly more common with nizatidine. It was not possible to determine whether a variety of less common events were due to the drug.

*Hepatic* – Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

*Cardiovascular* – In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

*CNS* – Rare cases of reversible mental confusion have been reported.

*Endocrine* – Clinical pharmacology studies and controlled clinical trials showed no evidence of antiandrogenic activity due to nizatidine. Impotence and decreased libido were reported with equal frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

*Hematologic* – Fatal thrombocytopenia was reported in a patient treated with nizatidine and another $H_2$-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

*Integumental* – Sweating and urticaria were reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

*Hypersensitivity* – As with other $H_2$-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

*Other* – Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage**: Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. Renal dialysis does not substantially increase clearance of nizatidine due to its large volume of distribution.

PV 2091 AMP
[091190]

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*Additional information available to the profession on request.*

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disposing to multiple IVF pregnancies, eg, maternal age, prior history of pregnancy, etc, may, in conjunction with cryopreservation, help to reduce the risk of multiple pregnancy.

Data indicate that multiple gestations account for the majority of maternal complications. The 22% pre-term delivery rate (<36 weeks) observed here is similar to that reported from other programs[9,10,12,13]. As expected, the rate was much higher for multiple gestations (41%) than for singletons (3%). However, older maternal age, in addition to multiple gestation, probably contributes to a high pre-term incidence of labor and delivery compared to primiparous patients who are not infertile. The incidence of first trimester bleeding, pregnancy-induced hypertension, premature rupture of membranes, and gestational diabetes is lower in our cohort than has been reported elsewhere[10]. Our data support the conclusions by Barlow et al[14] and Hill et al[13] that such complications are no more prevalent than in other populations of patients with infertility treated by other means. However, the comparatively high use of tocolytics reported in our series (51% of cases) is most certainly due to the relatively higher rate of multiple gestations than has been reported in other centers.

The higher multiple pregnancy rate also accounted for a high overall caesarean section rate (65%); 89% and 80% of twin and triplet pregnancies respectively, were delivered by caesarean section. Other authors have reported overall caesarean section rates of 33 to 56% in IVF gestations[9,11,12].

The overall incidence of neonatal morbidity (9%) is nearly identical to that reported by Yeh et al[10] who reported an 8.6% incidence, including pyloric stenosis, bilateral inguinal hernias and tibial torsion. Hernias and pyloric stenosis occurred in our series.

## Summary

There have now been more than 100 live births from in-vitro fertilization performed at the Pacific In-Vitro Fertilization Institute at Kapiolani Medical Center for Women and Children in Honolulu. Although our overall clinical pregnancy rates are comparable or better than those at other well-established programs on the Mainland, multiple gestation remains one of the major challenges associated with higher rates of pregnancy. The rates and types of complications, however, are similar to those reported in other IVF centers and for other treatment modalities for infertility. Clearly, it is the presence of multiple gestations, and not whether the pregnancy was initiated in vitro, that should be viewed as the most important risk factor for complications in women with infertility who are treated by IVF[13]. Advances in embryo-cryopreservation and the identification of risk factors may help to reduce the incidence of multiples in the future.

## ACKNOWLEDGEMENTS

The authors would like to thank the many institutions and individuals who have directly or indirectly contributed to the work reported here. This includes the directors and staff of Kapiolani Medical Center for Women and Children, the University of Hawaii John Burns School of Medicine, the Hawaii State Legislature and the office of Governor John Waihee. The authors also thank the following members of the office and laboratory staff of the Pacific IVF Institute without whose

*(Continued)* ➤

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**Action:** Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both.

Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalmic centers and release of posterior pituitary hormone.

Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by B-adrenergic receptors, its effect on blood pressure, if any, would be to lower it; however no adequate studies are at hand to quantitate this effect in terms of Yohimbine dosage.

**Indications:** Yocon® is indicated as a sympathicolytic and mydriatic. It may have activity as an aphrodisiac.

**Contraindications:** Renal diseases, and patient's sensitive to the drug. In view of the limited and inadequate information at hand, no precise tabulation can be offered of additional contraindications.

**Warning:** Generally, this drug is not proposed for use in females and certainly must not be used during pregnancy. Neither is this drug proposed for use in pediatric, geriatric or cardio-renal patients with gastric or duodenal ulcer history. Nor should it be used in conjunction with mood-modifying drugs such as antidepressants, or in psychiatric patients in general.

**Adverse Reactions:** Yohimbine readily penetrates the (CNS) and produces a complex pattern of responses in lower doses than required to produce peripheral a-adrenergic blockade. These include, anti-diuresis, a general picture of central excitation including elevation of blood pressure and heart rate, increased motor activity, irritability and tremor. Sweating, nausea and vomiting are common after parenteral administration of the drug.[1,2] Also dizziness, headache, skin flushing reported when used orally.[1,3]

**Dosage and Administration:** Experimental dosage reported in treatment of erectile impotence.[1,3,4] 1 tablet (5.4 mg) 3 times a day, to adult males taken orally. Occasional side effects reported with this dosage are nausea, dizziness or nervousness. In the event of side effects dosage to be reduced to ½ tablet 3 times a day, followed by gradual increases to 1 tablet 3 times a day. Reported therapy not more than 10 weeks.[3]

**How Supplied:** Oral tablets of Yocon® 1/12 gr. 5.4 mg in bottles of 100's NDC 53159-001-01 and 1000's NDC 53159-001-10.

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**IN-VITRO BIRTHS** *(Continued from page 363)*

vision, dedication, and tireless efforts this program would not exist: Terry Adcock, Pam Judy, Lisa Ontai, Gayle Kogleman, Robin Rose, Kathy Munemasa, Brenda Kaneoka, Anne Henry, Anne Carwyle, Bev Quon, Gayle Suzuki, Kim Okazaki, Jocelyn Won, Lawrene Quisano, Roxanne Ishii and Lisa Bertsch.

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**MISSION** *(Continued from page 357)*

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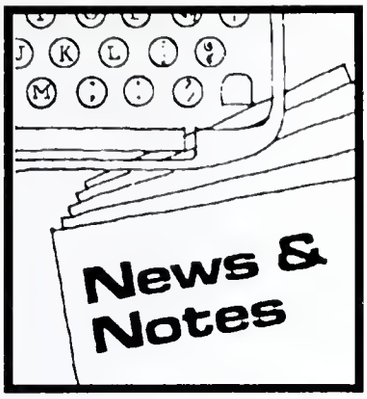


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## Memorial Celebration for $A^2$

Punahou Chapel 2 pm, Aug 22 (notes therefrom)

Chaplain John Heidel: "We came to honor him with our respect, love and expression of faith. We came to celebrate his life. We decided to call this memorial service a Memorial Celebration because Dr Arnold lived his life with celebration..."

Letter from Senator Dan Akaka: "Rarely does someone live his life with such joy, enlightenment and warmth. Those touched by this wonderful man are blessed..."

Fred Gilbert: "We came to celebrate the fact that he lived a full life — of caring and loving — we want to share all those things that tie us together..."

Muriel Muraoka: "I worked with Dr Arnold for 40 years. The Nurses Association even called me a dermatologist without a degree. I would tell him, 'You'll never get rich without me...' He would charge a patient $35 when the insurance had already paid $135. Dr Arnold experimented with aloe for wart treatment. I would tell the patient, 'Please pay now, before the wart grows back.' Dr Arnold was so absentminded. He would call me from San Francisco and say, 'I forgot why I called' and I would remind him, 'Today is my birthday.' Dr Arnold enjoyed his card games during lunch time 'Dr Arnold, thank you for guiding me from Heaven...'"

Fred Gilbert: "Harry was a good friend and colleague, and I know he would not totally approve of what we are doing today. He was so punctual. Meetings had to end at 1:30 pm. If we didn't, there would be claps of thunder and lightning..."

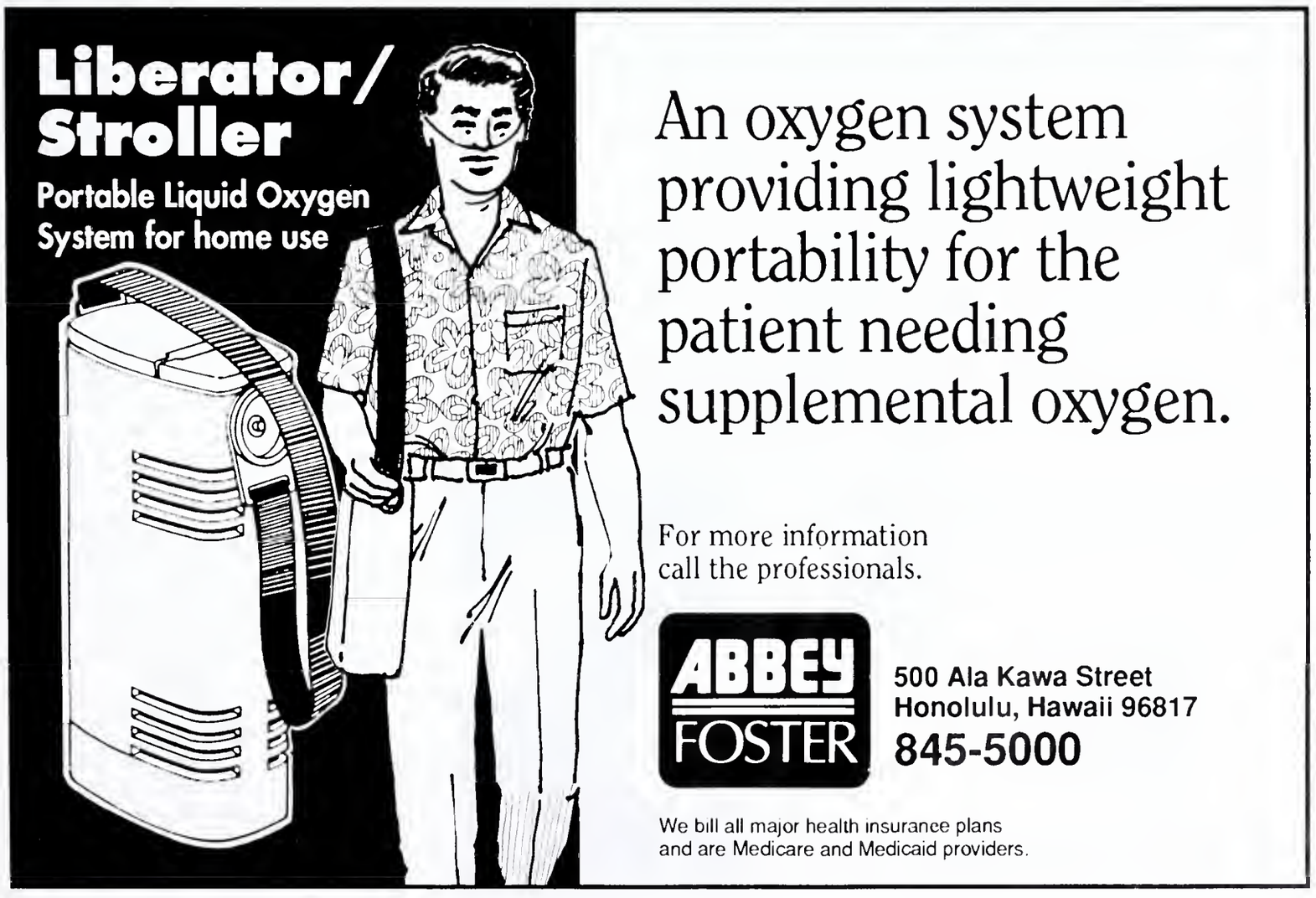
Sam Allison: "My first acquaintance with Harry was 47 years ago. He had written an editorial dealing with public health and I asked him a question. Several days later, I received a 4-page single-spaced reply. Harry was truly a Renaissance man. At the time, there was 'The Clinic' and the rest of us. But Harry was different. He was always courteous and friendly. 'Harry, we have lost a great leader...'"

Bob Kim: "I was privileged to work with Harry for 11 years. It was a great learning experience. He was so kind and gentlemanly and could speak such perfect pidgin that patients adored him. Harry was extraordinarily kind and fair. If you didn't know something, you asked Harry. He had this sidewinder (Ed — ancient manual typewriter that he picked with two fingers.) He had pots and pots of aloe plants around. Harry felt that the psyche had to do with dermatoses. He was a writer, an editor and speed-reader. He had been president of every significant dermatology society. The passing of Harry is the passing of a giant of a man. Mahalo."

Alan Izumi: "Dr Arnold was my inspiration and my teacher. A giant in dermatology. He had been president of every major dermatology society. He was always kind and fair and everyone trusted him. Harry was a scholar. There are so many stories about Harry and aloe. As a writer, he was unsurpassed. He had been editor of 3 journals and the *Andrews' Diseases of the Skin* is really Dr Arnold's textbook. He had this amazing ability to edit and compose..."

Bob Nordyke: "Harry signed his name $A^2$ in deference to his dad $A^1$. When I first got here, I thought I was a hotshot in nuclear med. That is, until I met Harry. He soon piled up on my desk stacks of books and journals on nuclear med that he had read. Harry had this old clacking typewriter he worked with two fingers. He would critique my articles for publications. He used to say,

*(Continued)* ➤



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## NEWS AND NOTES

*(Continued from page 367)*

'If you can't say in 10 minutes what you want to say, you don't know what you're trying to say.' Harry was always so competent and incisive — yet so modest, calm and kind. He made a better person of those with whom he came in contact..."

George Chaplin remembered: "He was against a dangling participle and for capital punishment."

Norm Goldstein recalled: "I first met Dr Arnold 27 years ago in a Straub library. He made me sit down, open my shirt, loosen my tie and take off my shoes. Thirteen years ago, we started on a special *HMJ* issue on Dr Arnold. We kept it all a secret from Harry for 3-1/2 years until 2 days before going to press, the proofs were on his desk. We printed 6,000 copies and sent them to every dermatologist..."

Fred Reppun: "I still have some blisters trying to carry on in his shoes. I learned to use 'eyebrows' thanks to Becky, Jennie and Doris Jasinski, who was managing editor for 10 years. I learned there was no such thing as a 20-year-old Japanese female, but rather a 20-year-old Japanese woman. Today, we honor him and celebrate his life by being here, and trying to live our lives with the same free spirit..."

### Oncology Dialogue

Moderator Glenn Kokame was concerned about the recent flurry of breast cancers in younger Japanese women. "Stemmy, you are the epidemiologist. Why are we seeing so many breast cancers in Japanese women?" Pathologist emeritus Grant Stemmerman: "I really don't know, but it could be the increase in 'positive energy balance' associated with obesity, fewer children, later pregnancies and improved economic status."

### Conference Humor

Eight-year-old Sarah brought home a note from the teacher saying the third-grade class will have a one-hour lecture on sex education. The parents were concerned but signed the release. Next day they asked Sarah, "What did you learn?" Sarah said, "No big deal. There were lots of pictures and lots of talk. Two things we learned: First, buy a lot of condominiums. And second, avoid all those intersections."

(As told by Clifford Melnyk, visiting gastroenterologist from U of Oregon who spoke on Acid-Pump Inhibitors in Aug)

* * *

"Why are attorneys buried 9-feet deep instead of 6?"

"Deep down, they really are nice guys."

(Visiting professor Victor Vestes at his best)

* * *

"What do you call 1,000 attorneys at the bottom of the ocean?"

"A good beginning."

■

# Maka O Ka Kauka

Russell T. Stodd MD

**The Federal government is trying "to steal $8 billion" from doctors.**

Necessity is the mother of strange bedfellows. The headline above came from the Congressperson who has been the most vocal and most critical of American medicine and physicians in general. Fortney (you remember "Pete") Stark, of California, is now the white knight leading us upward and onward against Gail Wilensky and the Health Care Financing Administration. Congressman Stark, with large bipartisan support — including the Hawaii delegation — has introduced legislation to change the conversion factor and the behavorial offset adjustment planned by HCFA. These two items are the most egregious aspects of the proposed Medicare fee schedule introduced through the RBRVS, and which have caused a monumental outcry from physicians all over the country (over 100,000 replies to HCFA). The intent is to stimulate the Administration (HCFA) to modify plans so as to coincide with the intent of Congress; however, if that is not forthcoming, Congress will be forced to act. And as an aside, all of Hawaii's Congressional group responded promptly and sympathetically. All 4 stated a willingness to urge Ms Wilensky to review her data and restructure the RBRVS phase-in. As has been stated, only a bureaucracy can battle a bureaucracy.

**Man is a clever animal who behaves like an imbecile.**

In Florida, the Board of Medicine has conducted hearings for 3 years on a generic rule stating, "Management of postsurgical care is the responsibility of the operating surgeon." The Florida Optometric Association has petitioned to have the rule declared invalid, and requested a hearing before an administrative judge. Interestingly, 2 Florida ophthalmologists joined the FOA in its petition to overturn the rule. Perhaps someone should determine their motivation. More than $100,000 in legal costs have been spent by the backers of the rule, while the optometrists would not reveal their legal expenses. Once

*(Continued)* ➤


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 *(Continued from page 369)*

again, who wins?? The attorneys, of course.

**In every real man a child is hidden that wants to play.**

And now — THESPIAN THERAPY — Mount Sinai Medical School in New York uses an examination where would-be doctors are tested for bedside manner. Students interviewed trained actors portraying real cases to determine the student's "ability to interact with patients and get information." The National Board of Medical Examiners is devising a similar test proposed as a part of evaluation of applicants.

**"All men are created equal except foreigners, negroes and Catholics."**

Changes in the U.S. immigration law indicate that for the first time since 1976, foreign-trained physicians with U.S. licenses will be able to apply for temporary working status. Prospective employers would merely submit a request to the U.S. Immigration and Naturalization Service; approval would take less than a month. The new law may be especially welcomed by Canadian physicians who want to head south and escape Canada's socialized system.

**No question is ever settled until it is settled right.**

Does DO equal MD? No, said a Georgia appeals court. A suit brought by a patient whose optic nerve had been pierced by an anesthetic needle, was dismissed. The court ruled that a member of one branch of medicine generally cannot testify against a member of another, so the osteopathic physician was deemed incompetent as an expert witness against an allopathic physician. Methods of diagnosis and treatment are not necessarily the same in all areas, said the court.

**God is not dead. He is alive and working on a much less ambitious project.**

No doubt most physicians do not require a guide book on self-destruction, but for those in need there is a new manual produced by the Hemlock Society called *Final Exit: The Practicalities of Self-Deliverance and Assisted Suicide for the Dying*. It hit the top best-seller list of the *New York Times* hard-cover advice books. Jay Leno observed that libraries don't like to carry the book — people who check it out, do not return it.

**"HCFA took what was not broken — and decided to break it."**

"HCFA's stultifying regulatory strategy, with its preference for government rules over market-generated innovation, is reminiscent of the central planning apparatuses that other nations are now struggling to leave behind." These words came from Judge Stanley Sporkin, to the delight of all of us who love America, when he ruled in favor of investigation and free enterprise; ergo, he ruled against HCFA. Our beloved nematode ASCRS (American Society of Cataract and Refractive Surgery) filed suit against HCFA in response to a new rule that discontinued Medicare reimbursement for investigational IOLs. HCFA arbitrarily announced that since more than 900 types of IOLs had been approved, there was no justification for reimbursement of investigational lenses. Ms Wilensky lost — so now the score is ophthalmology 1, HCFA 73. Joyous we should be over this limited skirmish, but the real problem is that HCFA is rolling onward with its stifling programs in a dozen other areas, turning the best and most innovative medical system in the world into a regimented, over-regulated, clumsy, bureaucratic public utility.

**There is only one success — to be able to spend your life in your own way.**

In the midst of the recession, the American Medical Association reports that the average physician in America earned $155,800 in 1989. Between 1981 and 1989, physician income rose 20% faster than the income of the general population during that period. But hey, are you an average physician?

**Addenda —**

— According to statisticians, you are 6 times more likely to die from a meteor strike than a commercial airplane crash.

— Men who smoked a pack of cigarettes a day for 20 years were 72% more likely to suffer impotence from penile arterial narrowing than non-smokers.

— My loathings are simple: stupidity, oppression, crime, cruelty, country music.

— Does virgin wool come from ugly sheep?

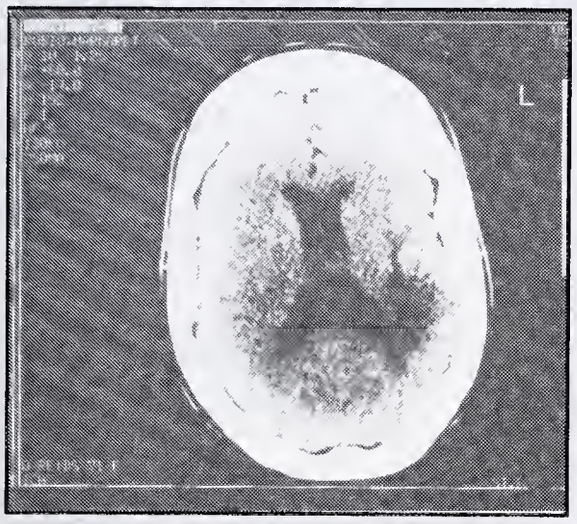
Aloha, and keep the faith.

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3. Transaxial view showing an infarct of the right frontal lobe and right basal ganglia in this 70 year old female with left sided weakness and confusion.




4. Coronal view in the same patient.

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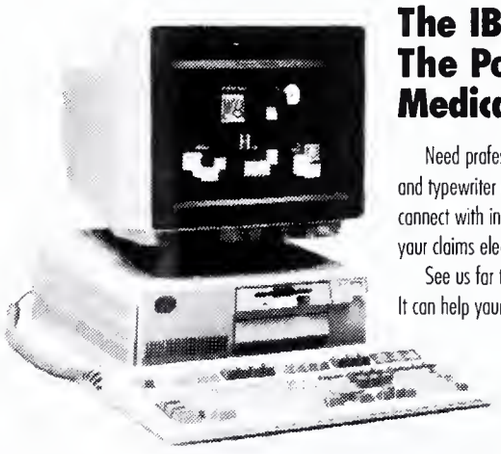
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# Highlights of the Proceedings of the House of Delegates of the Hawaii Medical Association 11-13 October 1991

The following Delegates were seated: Drs R Ando, F Holschuh, J McDonnell, S Wallach, J Chang, A Don, R Lee-Ching, CYH Wong, L Magnussen, L Sakai, R Laird, E Bade, R Goodale, T Smith, D Fu, H Percy, K Brady, P Blanchette, HKW Chinn, HH Chun, P DeMare, H Fong, M Shirasu, J Spangler, W Young, CCM Kam, AB Catts, WWL Dang, G Goto, M Hanlon, A Kunimoto, J Lumeng, S Uehara, E Adams, J Callan, PS Chan, W Dang, Jr, R DeJournett, C Gulbrandsen, S Hundahl, M Inada, L Jones, R Lau, S Levine, G Madamba, S Matsuda-John, J Miller, JIF Reppun, L Siri-Hundahl, R Stevens, G Yamamoto, J Young, B Coleman, B Fong, R Hicks, C Lehman, J Lewin, R Marvit, F Mateus, S Okumura, P Puapong, B Scherman, G Seto, G Starbuck, K Kurohara, C Kadooka, S Woo, J Sue, P Kim, A Arensdorf, J Betwee, J Briley, M Joshi, P Hoffman, G Zakaib, M Cheng, and N Kaneshiro. Also present were: Dr L Howard - Parliamentarian; Drs P Chinn and P Hellreich of the Hawaii Federation of Physicians and Dentists.

HMA staff present were: J Won, N Jones, B Kendro, J Asato, J Estioko, L Tong, P Kawamoto, C Sugita, K Hamada, D Canite, L Funai, and M Lindsey - recording secretary.

The 135th Annual House of Delegates was officially called to order on October 11, 1991 at 1:30 pm by speaker of the house, Richard Ando. Kalani Brady offered a traditional Hawaiian chant invocation in his spectacular Hawaiian tenor voice and a moment of silence was held in memory of the 13 physicians who had died during 1991: Verne Adams, Harry L Arnold, Jr, Etta Wright Best, John Chalmers, Lois Fishler, Masato Hasegawa, John Kometani, Ichiro Nadamoto, Jeffrey Nakamura, Nathan Shklov, Stanley Saiki, Fumiyo Sugimoto, and Arch Wigle.

Following the certification of the delegates by county societies, special guests were introduced: the AMA President John Ring and Mrs Ring, Dr and Mrs Gladden Elliott of the Board of Trustees of AMPAC, AMA's Nancy Kintzel and Dolores Pavela; AMPAC's Jay Keese; Nancy Evans, Western Region Vice President of the AMA Auxiliary and executive director from Idaho Medical Association Bob Seehusen.

At the installation banquet on Friday evening Dr Ring swore in the new president, Stephen J Wallach MD. The AH Robins Physician of the Year Award was presented to a surprised Allan R Kunimoto, Honolulu ophthalmologist, former HMA President and active community leader. Senator Ann Kobayashi was presented with an award as Legislator of the Year for her efforts on behalf of medical care and public health in Hawaii.

The HMA Auxiliary officers were officially sworn in by Mrs Nancy Evans of the AMA Auxiliary: President from Maui Gwen Fu (Mrs Denis Fu), President-elect from Kauai Joyce Chuang (Mrs Katok Chuang), Treasurer from Honolulu Susie Foo (Mrs Wendell Foo) and Secretary from Honolulu Paris Stevens (Mrs Rhoads Stevens). Maureen Lau (Mrs Lorrin Lau) will preside over the legislative duties and Edith Don of Maui will again coordinate the AMA-ERF efforts.

Speaker Richard Ando formally gaveled the meeting of the House of Delegates of the Hawaii Medical Association back into its final session on Sunday 13 October 1991 at a little after 1:30 pm. Duly elected delegates and alternates from the 5 County Medical Societies were present and seated as reported by Andrew Don, HMA Secretary. West Hawaii was the only constituent society that did not have a full complement of delegates. The newly admitted sections of the HMA: Those of the Young Physicians, the Resident House Officers and the Medical Student Section had elected their delegates and these were seated.

It was announced once again that Allan R Kunimoto had received the HMA AH Robins Award for Community Service 1991. The Speaker then recessed the business meeting in order to hear from: Chris Gulbrandsen, Dean of the University of Hawaii John A Burns School of Medicine; Jack Lewin, Director of the State Department of Health; Rep Duke Bainum, State Legislator; and Richard Ando, our Speaker. Each was allowed a few moments at the microphones.

Calling the House back to order, Vice-Speaker Fred Holschuh called for the election of 4 replacements to the Peer Review Committee, out of a slate of 5 who had been nominated. The winners, announced later, were: from Honolulu Kalani Childs, Patricia Chinn; from Kauai Paul Esaki and from Maui Ronald Kwon.

Speaker Ando then called up Elizabeth Adams, Chair, and members of the **Reference Committee on Internal Affairs and By-laws** Minolu Cheng, Paul Hoffman and Sada Okumura to make a report. The highlights of that report follow:

*Resolution No 1* for the HoD to initiate an annual award for the best scientific article published in the *Hawaii Medical Journal* during the preceding year was adopted as amended. The Reference Committee (RC) had recommended that such articles needed to be written by HMA members; the House, however, by voice vote, rejected that amendment so that it now reads any author. The HoD approved the amendment proposed by the RC that the requested monetary award of up to $100 be referred to the Finance Committee to recommend to the next meeting of the Council for a determination.

The House approved the RC's amendment to the **Report of the Annual Meeting and Arrangements Committee** to stipulate that the 1992 annual meeting be held at the Ilikai Hotel in Waikiki 9 to 11 October.

It approved the housekeeping amendments suggested by the **By-laws Committee** but advised that the Committee consider the possibility of establishing a seat in the House of Delegates for the Dean of the UH School of Medicine, so that it can be voted on at the HoD meeting in 1992.

The House approved **Resolution No 7** that resolved that the HMA and its members distribute red ribbons and explanatory cards in their offices in support of MADD through the holiday season, Thanksgiving through New Years, expressing concern for their patients' health and safety by eliminating all DUI accidents.

The HoD considered **Resolution No 8** that was intended to set up a special task force to recruit new members to the Association. The discussion pro and con was long, but the RC's recommendation for approval was adopted, including the proviso that there be representation from each component society. As a consequence of this action by the HoD, it approved the recommendation of the RC that **Resolution No 11,** a variation on the same subject, not be adopted.

*(Continued on page 386)* ➤

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**Contraindications:** Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digitoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in a lowering of serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. Adequate animal carcinogenicity studies have not been performed. One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°,2°,3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

4/11/91 • P91CA6143V

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Vice-Speaker Holschuh took over at the podium as Chairman James Lumeng of the **RC on Public Health and Legislation** made his report; members of his committee were Peter Kim, Lei Siri Hundahl and Kevin Kurohara.

The highlights of this report include:

The lengthy report of the **AIDS Subcommittee** was recommended by the RC that it be referred to the Communicable Disease Committee of the HMA, with a report back to the HMA Council in 6 months; this was approved by the HoD.

**Resolution No 5 Employee Impairment Testing** — The House approved an amendment that changed the title to Employee Performance Testing and adopted the recommendation of the RC that the resolved be changed to: That the HMA supports performance testing as an appropriate method to determine drug-related and other employee performance problems.

**Resolution No 9 HMA Policy on Screening Programs** — The RC amended the title by inserting the word *Disease* Screening Programs; and it amended the wording in the resolves to read as follows:

That the HMA *recommend* rather than (adopt) the policy; that screening should be for the purpose of the betterment or the maintenance of the health of the public we serve; that in every situation, for any abnormal or questionable finding as a result of the screening, every effort should be made to contact the patient's primary physician in order to discuss the finding with the physician; or, if the one screened has no personal physician, even the appearance of referral to self by the examiner would not be acceptable; a list of several appropriate physicians from which to choose should be offered the examinee; and, the HMA should monitor closely such screening programs. The House adopted this Resolution as amended.

**Resolution No 4 Certificate of Need** — The House adopted the resolution as it had been amended by the RC and after a further amendment was posed and passed to delete the first resolved; the remaining resolved to read as follows: That although the HMA *favors the repeal of* the CON law, the HMA should encourage the State of Hawaii Legislature at least to exempt the offices of physicians in private practice from the CON process until the law is repealed.

**Resolution No 10 Driving and Epilepsy** — was adopted by the HoD. Its Resolved reads as follows: That the HMA supports the Advisory Board Recommendation that a patient with a stable neurological disorder and with appropriate reports from a treating physician to confirm that the patient was seizure-free for 6 months and on adequate levels in the blood of anticonvulsant drugs, be allowed to drive a vehicle.

**Resolution No 2 To Increase Awareness of Environmental Effects on Health** was adopted.

**Resolution No 3 Cataract Surgery** — was adopted; it states that the HMA recognizes that the decisions whether to operate and the techniques to be used lie primarily and appropriately in a contract between the surgeon and his patient.

After a brief intermission, Speaker Ando called up the last Reference Committee, headed by its Chairman Myron Shirasu; its members included Ann Catts, Paul DeMare and Andrew Don. As the hour grew late, however, the Speaker had to rush to catch his plane, leaving Vice-Speaker Holschuh to carry the ball. It is unfortunate that these proceedings each year have ended with half or more of the delegates having to catch their planes home. [It seems to this reporter, who also could not stay till the bitter end, that the whole process needs to be streamlined. The HoD of the AMA presents a good model. Besides that, speakers as well as RC Chairs perhaps should take a course in expediting the proceedings. There is a lot of redundancy in the verbiage./Ed]

The **RC on Finance and Miscellaneous Business** made its report and the highlights of it were:

The **Report of President** McDonnell included the suggestion that serious consideration be given in the future to reimbursing the President, the immediate Past-President and the President-elect for the amount of time they have to spend on HMA business at a considerable sacrifice to themselves. The RC recommended that the issue be referred to the Finance Committee and the Long Range Planning Committee for study with a report to the HoD in a year. The House approved this.

The **Report of the Executive Director** was adopted with the RC recommendation that it be disseminated widely to every physician in the State.

The House approved the recommendation of the RC with reference to the **Report of the Treasurer/Finance Committee** for a balanced budget of $1,004,700 including the shift of $10,000 away from an item labeled "President Stipend" to "President Contingency"; a $40 increase in dues to $575; other housekeeping matters and that every HMA member bring in one new member.

There was prolonged debate over **Resolution No 6 Prescriptive Powers for Nurse Practitioners** submitted by Ernest Bade and Janice Friend. The RC recommended that the resolution *not* be adopted. At the RC hearing on Friday the 11th, some 50 people were in the audience and the testimony was evenly divided with about 20 speaking on each side. The RC, consequently, felt that a decision on the issue was premature. Ernest Bade proposed amendments to strengthen the resolution so as to state: That the HMA *oppose* prescriptive powers for nurse practitioners (Advanced Registered Nurse Practitioners and Certified Nurse Midwives) unless strict conditions are met, such as being under the supervision of a physician, in a clinical setting, after strict standards of education and training including pharmacology, advanced degrees and agreed-upon changes in the Nurse Practice Act, etc. Even after these amendments were approved, the HoD defeated the resolution and approved the recommendation of the RC "not to adopt".

Those elected to serve as officers, councilors, and delegates are listed below:

President-elect: Jeanette HJ Chang
Treasurer: John S Spangler
AMA Delegate: Calvin CM Kam
(Alternate AMA Delegates (2) are the current President and newly elected President-elect)
Speaker of the House: Frederick C Holschuh
Vice Speaker of the House: Leonard R Howard
Councilors:
Maui: Jon M Betwee
Kauai: Richard M Goodale
Kona: Theresa A Smith
Hilo: Craig E Kadooka
Honolulu: Roy S Adaniya, Patricia L Blanchette, HH Chun, Ronald L Embry, Roger T Kimura, Calvin YH Wong
Delegate-Young Physicians Section: M Duke Bainum
Delegate-Medical Student Section: Neil K Kaneshiro
Alternate Delegate-Medical Student Section: Timothy D Kim

JI Frederick Reppun MD
Reporter, with the assistance of HMA staff

# Highlights of the Scientific Sessions of the Hawaii Medical Association 11-13 October 1991

The opening session on Friday, October 11, 1991 had been devoted to a "Geriatric Mixed Plate." The second day of CME offerings included sessions on military medicine and native Hawaiian health care.

This was the first time native Hawaiian *kahuna la'au lapa'au* had been invited to meet with HMA. The program was presided over by native Hawaiian physicians with panelists discussing implications of the Congressionally mandated Native Hawaiian Health Care Act.

Papa Ola Lokahi is the umbrella organization mandated to bring about fruition of the Native Hawaiian Health Care Act, comprised of the Office of Hawaiian Affairs, Alu Like, the University of Hawaii, the State Department of Health, and E Ola Mau. It was E Ola Mau, the organization of Native Hawaiian Health Practitioners, that coordinated the panel discussion including the development of Native Hawaiian Health Care Systems in which Western and Traditional Hawaiian Medicine were blended.

The duties and practices of the Native Hawaiian healer were discussed, and it was emphasized that although a patient has the ability to see either a Native Hawaiian healer or a Western physician within these health systems, good medical care will always be the standard.

An excellent historic overview of Hawaiian health occasioned by the Native Hawaiian Health Care Act was presented by Nanette Judd, President of E Ola Mau, and by Fern Clark, Director of Hawaiian Health at the State Department of Health. The highlight of the discussions were presentations by Papa Henry Auwai and Sabina Mahelona who described specifics of traditional Native Hawaiian health.

Dr Terry Shintani discussed aspects of nutrition under the auspices of the Waianae diet program. Dr Emmett Aluli discussed health care as it currently exists on Molokai and Dr Wayne Fukino reviewed the blending of Western and traditional Hawaiian medicine on the island of Kauai.

The audience next moved to a traditional Hawaiian meal under the ironwood trees on Kalapaki Beach, compliments of The Queen's Medical Center. While listening to Hawaiian music, we partook of "healthy Hawaiian dishes, " including freshly picked *limu kohu,* chicken laulau, lomi salmon that was not salty, poke fish, special poi that contained only 10% water, baked bananas, fresh fruit, and tea made from a Hawaiian plant called *mamake.*

At the completion of the meal Papa Henry Auwai and Sabina Mahelona gave a demonstration of living medicinal Hawaiian plants. Many Western-trained physicians appeared to be spellbound as they learned how to treat diseases using traditional Hawaiian *la'au.*

On Sunday the 13th, the final morning of the Scientific Program, the topic was "Health Care Economics: Will Hawaii remain the benchmark for the Nation ?"

However, on this clear and cloudless Sunday morning in which Waialeale's Kawaikini peak at 5,243 feet stood unwreathed with mist, unusually so, inviting nature lovers to eschew airconditioned meeting ballrooms, the audience filtered in slowly. Alan Hawk, Chair of the HMA Health Care Costs Committee, emceed effectively and kept it all pretty much on time.

The topic was one that is on every physician's mind in these times. Alan set the tone in his opening remarks: "We cannot expect the Feds to help us here in Hawaii."

**Richard Meiers,** President and CEO of the Health Care Association of Hawaii, attempted the difficult task of explaining why health care costs are rising so fast in our nation.

He cited the finding that (l) businesses are particularly concerned because their profits are being diminished by the high cost of medical services that both union and non-union employees demand in negotiations for new contracts; and (2) that hospital administrators report that there is "no more fat" that can be trimmed from their budgets unless services will have to be cut. "The alternative to rising cost is rationing," he said, quoting from William Schwartz MD, writing in the *NEJM.*

Hospital expenses have risen, as has the cost of drugs, the expense tied to tort insurance, but 71% of the increased cost relates to wages and salaries paid to personnel. The rise in the cost of hospitalization accounts for 40% of the health care dollar in the U.S., which is acknowledged to equal 12.2% of GNP, or $2,700 per each and every American in 1990. At a steadily rising rate of 10% per year, this figure is expected to reach $6,000 per American by the year 2000.

Despite the high level of sophisticated medical care in the United States, the envy of the world, we still have 33 to 40 million Americans who are not covered by insurance. It was surprising to hear from Meiers that 66% of these do have jobs; however, these employed are often under-insured or do not qualify for insured care, and also are unqualified for Medicaid.

Based on his past experience at Tripler Army Medical Center and on the Mainland, Meiers spelled out some of the specifics:

a) Hospitals, in general, have had to deal with 23.6% of uncompensated costs; it is a fact that "cost-shifting" does go on, ie the charge to paying patients is increased to make this up in part, at least;

(b) the increase in the cohort of the aged patient means more serious illness and disability and longer, more expensive hospital stays;

c) technology is becoming ever more sophisticated and expensive;

(d) whereas in 1980 the average service by a physician cost $200, in 1990 it had risen to $500, payable by the patient or his insurance carrier.

Meiers pointed out that the overall picture above clearly indicates that for this multi-faceted problem, there cannot be any one single solution; that it will take a consensus derived from all the various elements of our society to come up with remedies. He feels strongly that each of the 50 states will have to come up with its own remedies commensurate with its own peculiar problems, agreeing with moderator Alan Hawk in this.

**Deane Neubauer PhD,** Prof of Political Science at the UH and for 25 years particularly interested in the field of health care and its cost, spoke next on the Incentives for Physicians

*(Continued on page 389)*

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to either Over- or Under-Utilize.

His introduction included the prediction that the percent of GNP would reach 15% in AD 2000, amounting to $1 trillion or $1,000 billion. He cited anywhere from 6% to 20% as the administrative costs at present and emphasized that the "sovereignty" of the consumer, meaning that the consumer has the power to determine what he should buy and how much of it and for what price, does not apply in the health care field. It is the physician who has almost total power over the cost of the service and the consumer has very little to say about it: "My life is in your hands, Doc; get me well and we'll see about who is to pay afterwards," says the average patient [although in this day and age, the average patient is far more akamai, we say ! / Ed]

Neubauer devoted the main body of his talk to reporting the research done on the variations in practice patterns among physicians of like specialties, amazingly, found to vary 8 to 1. It was also a surprise to discover that this was not based, as expected, on what Neubauer called supplier-induced, self-interest demand, ie the physician padding his fee by doing unnecessary procedures [as has been claimed by government and by third party carriers / Ed].

Neubauer repeatedly used the term "medical uncertainties". He felt strongly that the reforms in tort laws would result very little in reducing the factor of "defensive medicine" because these "uncertainties" would still exist. Therefore, it was up to the physicians to work on defining more narrowly the disparities between practice patterns, so as to make them more uniform with outcomes less uncertain.

When asked the question from the audience what he thought about the concept of the "gatekeeper" in medicine, he came out forthrightly with the statement that "some people think the consumer himself could be educated to be his own gatekeeper in the sense of being able to choose correctly the specialist to whom to refer himself; the cost of that education would be more than this nation could withstand !"

We thought his point was well made. HMOs thrive on gatekeepers. The American Academy of Family Physicians, in its dictum that every family needs an FP, is, in fact, propounding the gatekeeper system. New Zealand, Australia and Japan all use gatekeepers to ameliorate and control the mad rush of panicky people toward the most expensive and sometimes the least appropriate specialists for health care; and their systems are forms of national health care.

We also thought Prof Neubauer's "uncertainties", when one considers malpractice tort reform, comes very close to "mal-happenstance" that is a no-fault, which could be compensible under a national no-fault law. This would reduce the incidence of suits against alleged "mal-practice", therefore, markedly reduce the incidence of suits and ultimately reduce the costs occasioned by defensive medicine. For example, New Zealand has resolved this problem in this manner.

**Bernard Ho,** Vice-President of HMSA, spoke in place of Marvin Hall, its President, who was on the Mainland; his topic was "Managed Care."

Managed care includes a system that emphasizes prevention and early detection of illness, both in- and out-patient treatment, and co-payment as a means of preventing over-utilization. HMSA is proud and pleased to embody fee-for-service and to include most of the physicians in Hawaii as either Pars or Non-pars. This is in contrast to a closed system of health care, such as a true HMO in which the patient can expect no reimbursement for care if he goes to a provider outside the system. "Most employees of businesses and corporations favor managed care," said Bernie, "and its popularity is growing."

Ho vouchsafed his personal opinion that a no-fault system was needed to resolve the issue of high malpractice insurance premiums.

After the brief intermission, **Peter Sybinsky PhD,** Deputy Director of Health for Resources, ran through the essentials of the State Health Insurance Program (SHIP), reporting that only 3% of Hawaii's total population could be classified as the uninsured or the under-insured. Of the 30,000, 30% are unemployed. Close to 16,000 have been enrolled since about a year ago, half of them on the Neighbor Islands, 14,000 under HMSA and 2,000 under Kaiser (which is all that Kaiser wants). Forty-three percent of enrollees are children; 55% are women; 5% had income less than 100% above the poverty level and 85% under 150% above the poverty level of income. Well over 50% of Hawaii's physicians have agreed to accept SHIP patients and reimbursement to them has been up to Medicare level, which is considerably above that by Medicaid, but less than what HMSA pays the provider. Despite this enrollment within SHIP, Medicaid enrollment has increased by 7,000 cases this past year.

On being questioned, Sybinsky indicated that the money for the program has not yet run out, but that it was too early to tell whether it might. Enrollment has been at about a steady thousand new cases a month; this is expected to taper off as the pool diminishes. If over-utilization does not materialize, the strict limitations on benefits might be relaxed somewhat.

**Bernard Fong,** Medical Director of Aetna-Medicare for Hawaii and Guam, rapidly ran through the latest changes emanating from HCFA in Washington, the changes themselves following one after the other so rapidly that it is difficult for the practicing physician to keep up with them. He revealed that by 1995, Medicare would be under-funded by about $83 billion; that the federal budget was compartmented strictly into 3 sections: For health, the military and for foreign policy; that adjustments and reapportionments could be juggled within each section but *not* between the 3.

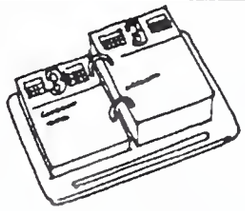
Bernie ended with a strong plea to physicians not within HMA to please join, because as never before, organized medicine needs to speak as one voice in self defense as Government attempts to regulate the practice of medicine.

**Alan Matsunami,** Acting Assistant Health Care Administrator at Medicaid Hawaii, was the last speaker on the program. He reported that the minimal level of service was being provided to 80,000 clients within a budget of $200 million a year; that the Legislature earlier this year had increased reimbursement to physicians from a prior level of 56 cents on the dollar to 60 cents. Although the Department of Human Services had received $5 million more for the next biennium, the Medicaid program had been cut back by $150 million.

"Hawaii's Medicaid program is one of the most comprehensive of any in the whole country," said Matsunami. "However, the biggest drain on its budget is the $150 million outlay to the institutionalizing of patients."

The panel of speakers assembled to hear comments from the audience, but no conclusions were reached other than as Alan Hawk said: "All element of our society, and particularly we physicians, need to address the issues"

J I Frederick Reppun MD
Reporter, with the assistance of Ed Morgan MD



# Continuing Medical Education

The Hawaii Medical Association does not review or evaluate the programs listed in the HAWAII MEDICAL JOURNAL Continuing Medical Education column and assumes no responsibility for educational value, scientific content, changes in agenda or cancellations.

## CALENDAR OF ACCREDITED EVENTS—CATEGORY 1

Accredited programs of CME allow one unit of AMA credit for each hour of instruction excluding all "breaks." Asterisked programs also are accredited for AAFP prescribed credit.

### LOCAL ACCREDITED PROGRAMS ONGOING

**John A. Burns School of Medicine**

1. Department of Medicine
   - A. Case Conferences, 2nd and 4th Tuesdays, 12:30-2p, Queen's University Tower, Room 618.
   - B. Grand Rounds, 1st and 3rd Tuesdays, 12:30-2p, Queen's University Tower, Room 618.
   - C. Endocrinology Grand Rounds, 1st Tuesday, 5:30-6:30p, Queen's University Tower, Room 506.
   - D. UH-Queen's Conference, every Friday, 8-9a, Queen's Medical Center, Mabel Smyth Auditorium.
   - E. Cardiology Grand Rounds, 3rd Tuesday, 6:30-7:30p, Queen's University Tower, Room 508.
   - F. Infectious Disease Grand Rounds, 1st and 3rd Thursdays, 5-6p, Queen's Nalani I Conference Room.
   - G. Dermatology Grand Rounds, 2nd Wednesday, 7:30-9:30a, Queen's Medical Center, Queen Emma Clinic.
   - H. Pulmonary Grand Rounds, 4th Monday, 12:30-1:30p, Queen's Medical Center, Kamehameha Lounge.
   - I. Nuclear Medicine Grand Rounds, 3rd Wednesday, 5-6:30p, Straub Clinic & Hospital, Doctors' Dining Room.
   - J. Medical-Surgical GI Grand Rounds, 3rd Friday, 12:45-1:45p, Kuakini Hospital, PB4 Classroom.
   - K. Rehabilitation Hospital of the Pacific Grand Rounds, 1st and 3rd Thursdays, 7:30-8:30a, Rehabilitation Conference Room, 1st floor.
   - L. Neurology Grand Rounds, 2nd Thursday, 12:30-1:30p, Queen's Medical Center, Kam Auditorium.
   - M. Geriatric Medicine Journal Club, 1st and 3rd Wednesdays, 5:30-7p or TBA, 9th Floor Lounge, HPM, Kuakini Medical Center.
   - N. Radiology Grand Rounds, every 2nd Tuesday, 5:30-8p, Queen's Medical Center, Radiology Classroom.
2. Department of Obstetrics and Gynecology
   - A. Grand Rounds, Wednesdays, 7:30-8:30a, Kapiolani Medical Center for Women and Children, 2nd floor auditorium.
   - B. Tuesday Conference, Tuesdays, 1-2p, Kapiolani Medical Center for Women and Children, 2nd floor auditorium.
   - C. UH Conference, Fridays, 2:30-3:30p, Kapiolani Medical Center for Women and Children, 2nd floor auditorium.
3. Division of Orthopedics
   - A. Fracture Conference, Mondays, 5-6p, Queen's University Tower, Room 618.
   - B. Shriners' Tuesday Conference, Tuesdays, 7:15-8:15a, Shriners Children's Hospital, Auditorium.
4. Department of Pediatrics
   - A. Grand Rounds, Thursdays, 8-9a, Kapiolani Medical Center for Women and Children, 2nd floor auditorium.
   - B. Monday Noon Conference, 12:45-1:45p, Kapiolani Medical Center for Women and Children, 2nd floor auditorium.
   - C. Pediatric Infectious Disease Conference, Thursdays, 12:30-1:30p, Kapiolani Medical Center for Women and Children, 3rd-floor conference room.
   - D. Perinatal Grand Rounds, Fridays, 8:15-9:15a, Kapiolani Medical Center for Women and Children, Conference Room B.
5. Department of Psychiatry
   - A. Grand Rounds, Fridays, 8-9:30a, Queen's University Tower, Room 618.
   - B. Scientific Forum, Mondays, 12:30-2p, Kapiolani Medical Center for Women and Children, Conference Room 626.
   - C. Hawaii State Hospital Psychiatry Education Conference, 3rd Wednesday, 10:30a-noon, Hawaii State Hospital, Goddard Conference Room.
6. Department of Surgery
   - A. Grand Rounds, 1st, 2nd, and 3rd Saturdays, 7:30-9a, rotating hospitals.
   - B. Statistical M&M, last Saturday, 7:30-9a, rotating hospitals.
   - C. Journal Club, 1st and 3rd Tuesdays, 6-8 p, Queen's University Tower, Room 620.
   - D. Medical-Surgical GI Grand Rounds, 3rd Friday, 12:45-1:45p, Kuakini Medical Center, PB4 Classroom.
   - E. Pediatric Surgical Grand Rounds, 1st Friday, 12:45-1:45p, Kapiolani Medical Center for Women and Children, Conference Room B.
   - F. Basic Science Lecture, Wednesdays, 7:15-8:15a, Queen's University Tower, Room 618.
7. Department of Pathology
   - A. Neuropathology Conference, 1st Saturday, 8-9a, St. Francis Hospital, Sullivan IV Classroom.
   - B. Pathology Grand Rounds, bimonthly, 7:30-8:30p, rotating locations.

   For further information on any of these programs, please call the Continuing Medical Education office at 956-5087.

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**Castle Medical Center**

1. CME Programs, 1st, 2nd, and 3rd Tuesdays, 12:30-1:30p, Castle Medical Center's auditorium.
2. Windward Oncology Programs, 4th Tuesday, 12:30-1:30p, Castle Medical Center's auditorium.

   For further information, call Education and Training at 263-5186.

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**Chart Rehabilitation of Hawaii Inc.**

1. CME Programs, Thursdays, 8-9a, Topics and speakers to be announced.

   For further information, or to be placed on the mailing list, contact Comprehensive Health and Active Rehabilitation Training (CHART) at 841-6006.

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**Hawaii Medical Association**

1. HMA Maternal and Perinatal Mortality Study Committee, on an on-call basis. 1360 S. Beretania St., 2nd Floor. Call 536-7702 to confirm meeting schedule.)

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**Hawaii Ophthalmological Society**

1. Monthly Dinner Meeting, 3rd Thursday of each month, 6:30-9:30p, The Pacific Club.

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**Hawaii Thoracic Society**

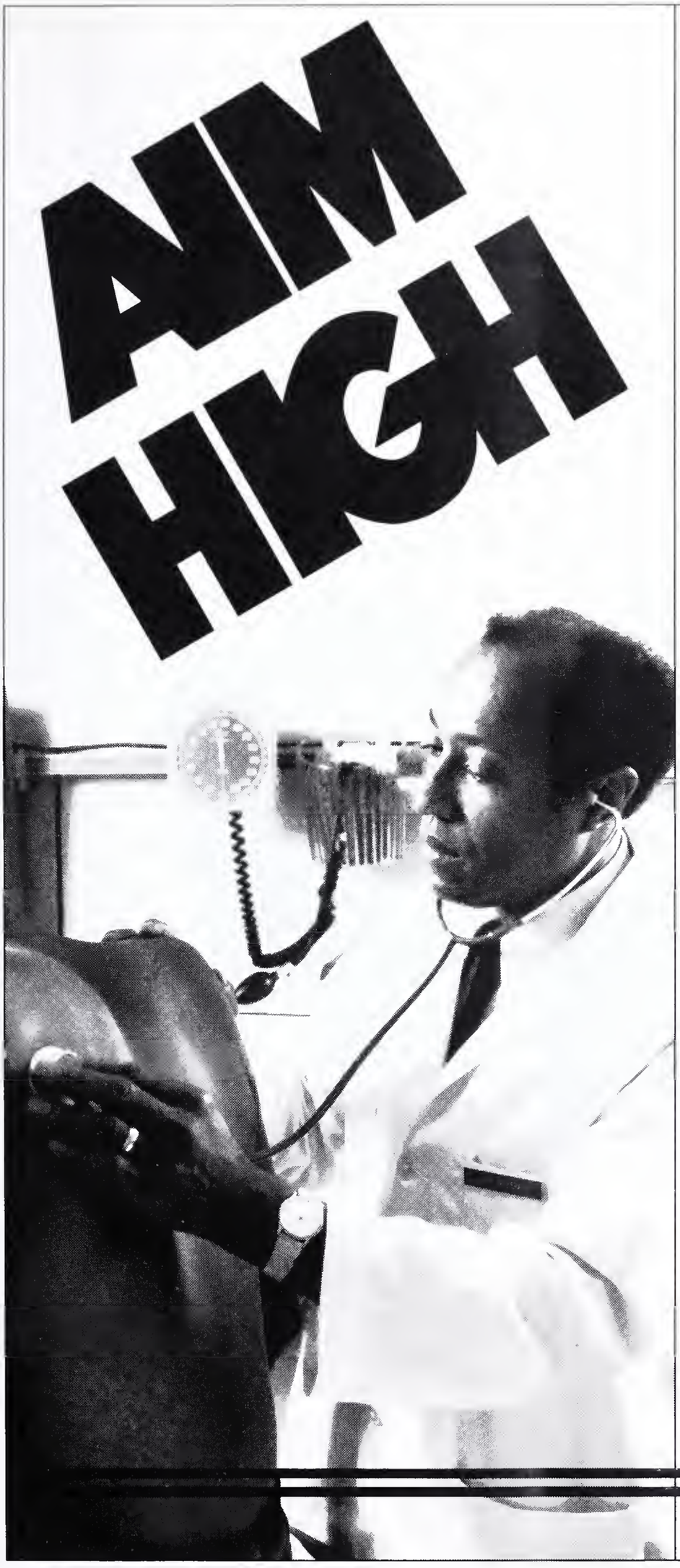
1. To be announced —Visiting Professorship Program Statewide.
2. Sinclair Chest Club Quarterly Dinner Meetings. Call Rosemary Respicio, BSN, at 537-5966 for dates and speakers.

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**Hilo Hospital**

1. Radiology Conference, 1st Friday, 12:30-1:30p, GC-1 Conference Room.
2. Tumor Conference, 2nd Friday, 12:30-1:30p, GC-1 Conference Room.

*(Continued on page 393)* ➤




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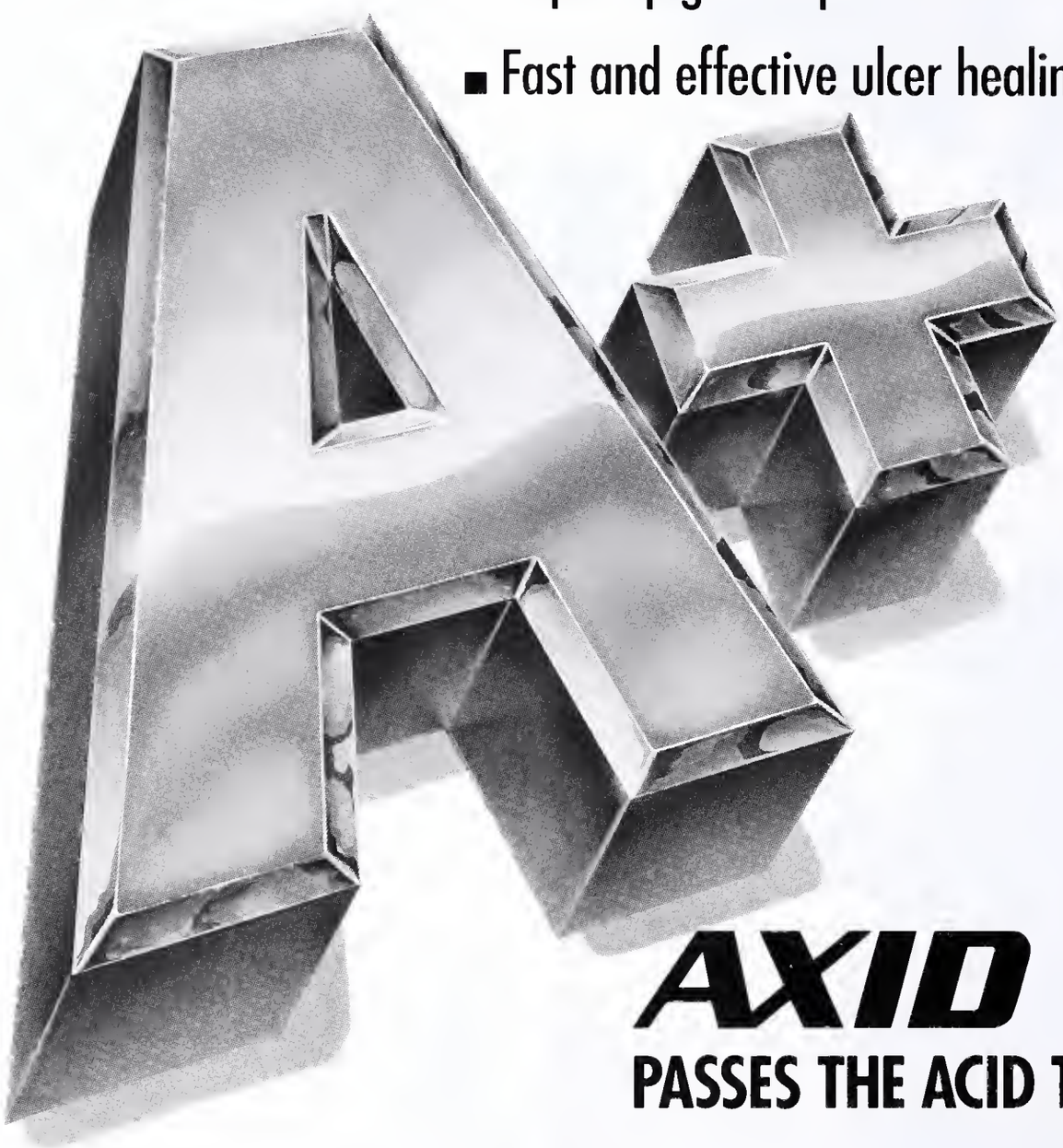
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*See adjacent page for references and brief summary of prescribing information.*

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**Indications and Usage**: 1. *Active duodenal ulcer*—for up to 8 weeks of treatment. Most patients heal within 4 weeks.

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**Contraindications**: Known hypersensitivity to the drug. Because cross sensitivity in this class of compounds has been observed, $H_2$-receptor antagonists, including Axid, should not be administered to patients with a history of hypersensitivity to other $H_2$-receptor antagonists.

**Precautions**: *General*—1. Symptomatic response to nizatidine therapy does not preclude the presence of gastric malignancy.

2. Dosage should be reduced in patients with moderate to severe renal insufficiency.

3. In patients with normal renal function and uncomplicated hepatic dysfunction, the disposition of nizatidine is similar to that in normal subjects.

*Laboratory Tests*—False-positive tests for urobilinogen with Multistix® may occur during therapy.

*Drug Interactions*—No interactions have been observed with theophylline, chlordiazepoxide, lorazepam, lidocaine, phenytoin, and warfarin. Axid does not inhibit the cytochrome P-450 enzyme system, therefore, drug interactions mediated by inhibition of hepatic metabolism are not expected to occur. In patients given very high doses (3,900 mg) of aspirin daily, increased serum salicylate levels were seen when nizatidine, 150 mg b.i.d., was administered concurrently.

*Carcinogenesis, Mutagenesis, Impairment of Fertility*—A 2-year oral carcinogenicity study in rats with doses as high as 500 mg/kg/day (about 80 times the recommended daily therapeutic dose) showed no evidence of a carcinogenic effect. There was a dose-related increase in the density of enterochromaffin-like (ECL) cells in the gastric oxyntic mucosa. In a 2-year study in mice, there was no evidence of a carcinogenic effect in male mice, although hyperplastic nodules of the liver were increased in the high-dose males as compared with placebo. Female mice given the high dose of Axid (2,000 mg/kg/day, about 330 times the human dose) showed marginally statistically significant increases in hepatic carcinoma and hepatic nodular hyperplasia with no numerical increase seen in any of the other dose groups. The rate of hepatic carcinoma in the high-dose animals was within the historical control limits seen for the strain of mice used. The female mice were given a dose larger than the maximum tolerated dose, as indicated by excessive (30%) weight decrement as compared with concurrent controls and evidence of mild liver injury (transaminase elevations). The occurrence of a marginal finding at high dose only in animals given an excessive and somewhat hepatotoxic dose, with no evidence of a carcinogenic effect in rats, male mice, and female mice (given up to 360 mg/kg/day, about 60 times the human dose), and a negative mutagenicity battery are not considered evidence of a carcinogenic potential for Axid.

Axid was not mutagenic in a battery of tests performed to evaluate its potential genetic toxicity, including bacterial mutation tests, unscheduled DNA synthesis, sister chromatid exchange, mouse lymphoma assay, chromosome aberration tests, and a micronucleus test.

In a 2-generation, perinatal and postnatal fertility study in rats, doses of nizatidine up to 650 mg/kg/day produced no adverse effects on the reproductive performance of parental animals or their progeny.

*Pregnancy—Teratogenic Effects—Pregnancy Category C*—Oral reproduction studies in rats at doses up to 300 times the human dose and in Dutch Belted rabbits at doses up to 55 times the human dose revealed no evidence of impaired fertility or teratogenic effect, but, at a dose equivalent to 300 times the human dose, treated rabbits had abortions, decreased number of live fetuses, and depressed fetal weights. On intravenous administration to pregnant New Zealand White rabbits, nizatidine at 20 mg/kg produced cardiac enlargement, coarctation of the aortic arch, and cutaneous edema in 1 fetus, and at 50 mg/kg, it produced ventricular anomaly, distended abdomen, spina bifida, hydrocephaly, and enlarged heart in 1 fetus. There are, however, no adequate and well-controlled studies in pregnant women. It is also not known whether nizatidine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Nizatidine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

*Nursing Mothers*—Studies in lactating women have shown that 0.1% of an oral dose is secreted in human milk in proportion to plasma concentrations. Because of growth depression in pups reared by treated lactating rats, a decision should be made whether to discontinue nursing or the drug, taking into account the importance of the drug to the mother.

*Pediatric Use*—Safety and effectiveness in children have not been established.

*Use in Elderly Patients*—Healing rates in elderly patients were similar to those in younger age groups as were the rates of adverse events and laboratory test abnormalities. Age alone may not be an important factor in the disposition of nizatidine. Elderly patients may have reduced renal function.

**Adverse Reactions**: Clinical trials of varying durations included almost 5,000 patients. Among the more common adverse events in domestic placebo-controlled trials of over 1,900 nizatidine patients and over 1,300 on placebo, sweating (1% vs 0.2%), urticaria (0.5% vs <0.01%), and somnolence (2.4% vs 1.3%) were significantly more common with nizatidine. It was not possible to determine whether a variety of less common events were due to the drug.

*Hepatic*—Hepatocellular injury (elevated liver enzyme tests or alkaline phosphatase) possibly or probably related to nizatidine occurred in some patients. In some cases, there was marked elevation (>500 IU/L) in SGOT or SGPT and, in a single instance, SGPT was >2,000 IU/L. The incidence of elevated liver enzymes overall and elevations of up to 3 times the upper limit of normal, however, did not significantly differ from that in placebo patients. All abnormalities were reversible after discontinuation of Axid. Since market introduction, hepatitis and jaundice have been reported. Rare cases of cholestatic or mixed hepatocellular and cholestatic injury with jaundice have been reported with reversal of the abnormalities after discontinuation of Axid.

*Cardiovascular*—In clinical pharmacology studies, short episodes of asymptomatic ventricular tachycardia occurred in 2 individuals administered Axid and in 3 untreated subjects.

*CNS*—Rare cases of reversible mental confusion have been reported.

*Endocrine*—Clinical pharmacology studies and controlled clinical trials showed no evidence of antiandrogenic activity due to nizatidine. Impotence and decreased libido were reported with equal frequency by patients on nizatidine and those on placebo. Gynecomastia has been reported rarely.

*Hematologic*—Fatal thrombocytopenia was reported in a patient treated with nizatidine and another $H_2$-receptor antagonist. This patient had previously experienced thrombocytopenia while taking other drugs. Rare cases of thrombocytopenic purpura have been reported.

*Integumental*—Sweating and urticaria were reported significantly more frequently in nizatidine- than in placebo-treated patients. Rash and exfoliative dermatitis were also reported.

*Hypersensitivity*—As with other $H_2$-receptor antagonists, rare cases of anaphylaxis following nizatidine administration have been reported. Rare episodes of hypersensitivity reactions (eg, bronchospasm, laryngeal edema, rash, and eosinophilia) have been reported.

*Other*—Hyperuricemia unassociated with gout or nephrolithiasis was reported. Eosinophilia, fever, and nausea related to nizatidine have been reported.

**Overdosage**: Overdoses of Axid have been reported rarely. If overdosage occurs, activated charcoal, emesis, or lavage should be considered along with clinical monitoring and supportive therapy. Renal dialysis does not substantially increase clearance of nizatidine due to its large volume of distribution.

PV 2091 AMP
[091190]

**References**
1. Data on file, Lilly Research Laboratories.
2. *Scand J Gastroenterol* 1987,22(suppl 136):61-70
3. *Scand J Gastroenterol* 1987,22(suppl 136):47-55
4. *Am J Gastroenterol* 1989,84:769-774

NZ-2943-B-149347

*Additional information available to the profession on request.*

Lilly

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## CME *(Continued from page 390)*

3. "Great Case" Conference/Clinical Pharmacology, 3rd Friday, 12:30-1:30p, GC-1 Conference Room.
4. Pathology Conference/Morbidity-Mortality Review, 4th Friday, 12:30-1:30p, GC-1 Conference Room.
5. Visiting Professor/Network for Continuing Medical Education Tapes (ETV), Saturdays, 7-8a, GC-1 Conference Room.

For further information, call Administration at 969-4382.

### Kaiser Permanente Medical Center

1. Tumor Board, Tuesdays, noon-1 p, Moanalua Auditorium.
2. Obstetrics/Perinatal Conference, last Tuesday, 8-9a, Moanalua Conference Room C-D.
3. Orthopedic Conference, Wednesdays, 8:30-9:30a, Moanalua Conference Room C-D.
4. Laboratory Medicine Seminar, Wednesdays, 11a-noon, Laboratory Conference Room.

*5. Medicine Grand Rounds, Wednesdays, 8-9a, Moanalua Auditorium.

*6. Interdepartmental Conferences, 3rd Wednesday, every other month (beginning Jan. 1990), Moanalua Auditorium (call CME Office for topic.)

*7. Family Practice Grand Rounds, 4th Thursday, 7:45-9a, Moanalua Conference Room C-D.

8. Surgical Grand Rounds, Fridays, 8-9a, Moanalua Auditorium.
9. Surgery M&M Conference, Fridays, 9-10a, Moanalua Auditorium.
10. Pathology Conference, Saturdays, 11a-noon, Conference Room A.
11. Network for Continuing Medical Education (NCME) Videotape Program, Monday-Friday, available on request.

For further information, call CME Office at 834-9496 for topics.

### Kona Hospital

1. CME Meeting, 2nd Thursday, bimonthly (January, March, etc.), 8-9a, Hospital Dining Room.
2. Grand Rounds/Tumor Board, 4th Wednesday, 8:30-9:30a, Hospital Dining Room.
3. Visiting Professor Programs, (For information, call 322-4429 or 322-4455.)

### Kuakini Medical Center

1. Visiting Professor Lectures (ongoing).
2. Guest Lectures (ongoing).
3. Neurology Conference, 2nd Monday, 12:30-1:30p, Resident's Conference Room.
4. Neuroradiology Conference 3rd Monday, 8-9a, PB-4 Conference Room.
5. Nephrology Conference, 3rd Monday, noon-1p, Resident's Conference Room.
6. Department of Ophthalmology Meeting, 1st Tuesday, 12:30-1:30p, Private Dining Room.
7. Internal Medicine Study Club, ongoing 2nd Tuesday, 6-7p, PB-4 Conference Room.
8. Department of Medicine (M&M), 4th Tuesday, 1-2p, Hale Pulama Mau Auditorium.
9. Endocrine Conference, 1st Wednesday, 12:30-1:30p, Resident's Conference Room.
10. G.I. Conference, 2nd Wednesday, 12:30-1:30p, Resident's Conference Room.
11. Infectious Disease Conference, 3rd Wednesday, 12:30-1:30p, Resident's Conference Room.
12. Oncology Conference, Thursdays, 7:30-8:30a, PB-5 Conference Room.
13. Hematology Oncology Conference, 1st Thursday, 12:30-1:30p, Resident's Conference Room.
14. Pulmonary Conference, 2nd Thursday, 1-2p, Resident's Conference Room.
15. Rheumatology Conference, 4th Thursday, 12:30-1:30p, Resident's Conference Room.

*(Continued)* ➤

16. Cardiology Conference, 1st Monday, 12:30-1:30p, Resident's Conference Room.
17. Surgical Conference, 1st and 2nd Friday, 12:45-1:45p, PB-5 Conference Room. (Note: Also 4th Friday, if there are 5 Fridays in a month.)
18. Nutrition Conference, 2nd Friday, bimonthly 12-1p, Private Dining Room.
19. Surgical Mortality and Morbidity Conference, last Friday, 12:45-1:45p, PB-5 Conference Room.

**Maui Memorial Hospital**

1. Department of Medicine, 1st Thursday, 7-8a, auditorium.
2. Department of Surgery, 2nd Thursday, 7-8a, auditorium.
3. Department of Obstetrics & Gynecology, 3rd Thursday, 7-8a, classroom No. 2.
4. Department of Pediatrics, 4th Thursday, 7-8 , auditorium.
5. Fifth Thursday Meeting: 7-8a, auditorium.
6. Tumor Board Conference; 2nd Friday and 4th Wednesday, 7-8a, multipurpose room.
7. Anesthesia Conference, 2nd Wednesday, 7-8a, multi-purpose room.

**The Queen's Medical Center**

1. Anesthesiology Conference, 1st and 2nd Wednesdays, 7-8a, Doctors' Conference Room.
2. Emergency Medicine Conference, 3rd Tuesday, 11:30-12:30p, Ultrasound Conference Room.
3. MICU Lecture, Monday-Thursday, time varies from 2-3p, Queen Emma Tower Conference Room 4A, 4B or 4C. (For exact schedule, call 547-4481).
4. Neuro-Radiology Conference, Mondays, 8-9a, Imaging Services classroom, QET No. 2.
5. OB/GYN Conference, every Monday, 1-2p, Kamehameha Auditorium.
6. Ophthalmology Conference, 4th Tuesday, 4:45-6p, Doctor's Conference Room.
7. Orthopedic Conference, every Wednesday, 7-8a, Kamehameha Auditorium.
8. Otolaryngology Conference, 1st Friday, 7:30-8:30a, Imaging Classroom and 2nd Friday, 7:30-8:30 a, Harkness Room 139.
9. Pathology Conference, every Wednesday, 7-8a, Queen Emma Tower, 4th floor.
10. Pediatrics Conference, 4th Thursday, 12:30-1:30p, Harkness Board Room.
11. QMC-UH Grand Rounds, Mondays, Wednesdays, and Thursdays, 12:30-1:30p, (Mondays at Kamehameha Lounge and Wednesday, Thursdays at Kamehameha Auditorium.)
12. QMC-UH Medical Conference, every Friday, 8-9a, Mabel Smyth Auditorium.
13. Surgical Conference, every Tuesday, 4:30-5:30p, Kamehameha Auditorium.
14. Tumor Conference, every Thursday, 12:30-1:30p, Cafeteria Conference Room.
15. Advanced Cardiopulmonary Life Support. For further information, contact Nursing Education 547-4373.
16. Community Consortium of AIDS Physicians in Hawaii.
    For further information, contact: David McEwan, MD, 537-2211.

**St. Francis Medical Center**

*1. Oncology Conference, Mondays, 7:30-8:30a, Sullivan IV Classroom.
*2. EENT Meeting, 1st Tuesday, 7:30-8:30a, Sullivan IV Classroom.
*3. Surgery Grand Rounds, 1st, 2nd, and 3rd Fridays, 7:30-8:30a, Sullivan IV Classroom.
*4. Dept. of Medicine Morbidity and Mortality Conference, 1st Thursday of each month, 8-9a Sullivan IV Classroom. (For SFMC staff members only).
*5. Dept. of Medicine Conferences, Thursdays, except for 1st and last Thursdays of each month, 8-9a, Sullivan IV Classroom.
*6. Medico-Legal Seminars, last Thursday every other month, 8-9a, Sullivan IV Classroom (Everyone welcome).
*7. Bioethics Seminars, last Thursday, every other month, 8-9a, Sullivan IV Classroom.
*8. Hematology Conference, 3rd Thursday, 12:30-1:30p, Sullivan IV Classroom. (Contact the Education Department at 547-6410 if conference is scheduled for the month).
*9. Internal Medicine Review series, Monday, Wednesday, Thursday, Friday, 12:30-1:30p, Sullivan IV Classroom. (Contact the Medical Education Office at 547-6497 for specific dates of lectures.)
*10. Dept. of Surgery Morbidity and Mortality Conference, last Friday of each month, 7:30-8:30a, Sullivan IV Classroom. (For SFMC staff members only).

**Straub Clinic & Hospital**

1. Associates Meeting, 1st Monday, 5:30-7p, every other month, Doctor's Dining Room.
2. Burns Rounds, 1st and 3rd Wednesdays, 4-5p, Hospital 3E Conference Room.
3. Cardiac Surgery Conference, 4th Tuesday, 4:30-5:30p, Doctor's Dining Room.
4. Doctors-On-Call, every month date varies, 5:45-6:45p Straub Waikiki. (For further information, call CME office, 522-3151.)
5. Ophthalmology Conference, 3rd Thursday, 4:30-5:30p, First Insurance Center, Room 950.
6. Friday Noon Conference, Fridays, 12:30-1:30p, Doctor's Dining Room.
7. Gastroenterology Journal Club, 4th Tuesday, 5-6:30p, Hospital 4th Floor Conference Room.
8. Neuropathology Conference, 4th Saturday, 8-9a, Doctor's Dining Room.
9. Patient Care Conference, 2nd Tuesday, 5-7p, Doctor's Dining Room.
10. Surgical Morbidity and Mortality Conference, 4th Tuesday, 7-8a, Doctor's Dining Room.
11. Neuropathology Conference, 4th Saturday, 8-9a, Doctors Dining Room.
12. Video Conference, 1st Tuesday (may vary, call CME office, 522-3151 for specific dates), 12:30-1:30p, Doctors Dining Room.
    For further information or to request our monthly calendar, call the Office of Professional Activities, 522-3151.

**Wahiawa General Hospital**

1. CME Program, Tuesdays, 1-2p, SNF I Dining Room. For further information, call the Medical Staff Services Office at 621-8411.
   Note: All conferences are subject to change. Monthly calendars are available on request.

**Wilcox Memorial Hospital**

*1. CME Programs, Mondays, noon-2p, Wilcox Conference Rooms.
    For further information, call Medical Staff Services 245-1173.

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# Sports medicine in Hawaii: Care of the high school athlete in Oahu's public schools

Michael R McCarthy EdD ATC PT*
W. Douglas B Hiller MD**
Joy L Yates-McCarthy MS ATC†

*A recent study by the National Athletic Trainers Association indicated that injuries occur more often during practice than during games in high school athletics[1]. Results of the 3-year study indicated that 60% of basketball injuries occurred in boys and young men during practice and 59% occurred in women. About 2/3 of the estimated 120,000 injuries suffered by prep wrestlers each year happen during practice. The study found that an average of 331,865 high school football players (1/3 of the million who play football each year) were sidelined by an injury at least once. With these statistics in mind, our study looks at the approach to the management of injury in the public schools that make up the Oahu Interscholastic Association (OIA) in the state of Hawaii. The estimated number of student athletes that participate in organized athletics in the OIA is 7,960 and the number of coaches is 1,189.*

## Research design

This study was designed to address the issues regarding interscholastic sports health care. We asked the high school athletic directors several questions that included (a) what type of medical supervision is being provided at organized practice and games; (b) who serves as the team athletic trainer for your school; (c) who is responsible for the care and prevention of athletic injuries; (d) which person makes the decision about whether the athlete can return to practice and/or games; and (e) have all coaches been certified in providing basic first aid?

The questionnaire used in this study was adapted from a questionnaire designed by Dr Mark A Anderson. He is a professor of physical therapy and director of graduate studies in sports medicine at the University of Oklahoma Health Sciences Center. This questionnaire is designed to gather information about the involvement of physicians, coaches, and trainers in the health care of students who participate in athletics. Supplementing that, we gathered background information as to the extent of student participation in athletics and the size of the coaching staff.

## Collection of data

The athletic director in each of the 21 public schools on the island of Oahu, was sent the questionnaire by mail (the names and addresses were obtained from the OIA office to ensure that the information was complete and accurate). A cover letter explained the purpose of the project, emphasizing that the OIA was cooperating in the study, and promised anonymity. The athletic director was asked to complete the questionnaire personally. The initial mailing was done in late October of 1990 and a repeat mailing was done 4 weeks later. A stamped return envelope was included with each mailing. The two mailings achieved an overall response rate of 100%.

## Results

### The physicians role

Fourteen of the 21 schools in the OIA have a designated team physician. Seven of the team physicians were identified as family practice physicians; 3 were internists; 2 were orthopedists; one was a general surgeon, and one a pediatrician. Of the respondents, 6 did not know if their team physician had specialized training in sports medicine.

At 4 schools the preseason physical examination of student athletes was performed by the team physician whereas at 14 schools it was done by the athlete's family physician. Only one school had athletes in all sports given group physicals. No physicals were required in 2 of the schools.

Not one of the public schools provided medical supervision at organized practices and only 3 had a physician on call. Although some schools were unable to find a physician willing to attend games, 17 out of 21 had physician coverage at varsity football games. Physician coverage at junior varsity football games was provided by 16 schools. No physician was available during the other boys and girls sporting events that included basketball, wrestling, baseball, softball, judo, soccer and volleyball games. At schools lacking actual physician attendance at games on a regular basis, 7 have a physician on call for home games.

### The role of the athletic trainer

Athletic trainers, prepared by formal education and experi-

(Continued) ➤

* Michael R McCarthy has a doctorate in education, is a certified athletic trainer and is a physical therapist at Therapy Specialists, Inc, Honolulu, Hawaii
** W Douglas B Hiller is an orthopedic surgeon and assistant clinical professor at the University of Hawaii School of Medicine
† Joy L Yates-McCarthy is a certified athletic trainer

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ence and certified by the National Athletic Trainers' Association (NATA), can make effective initial medical judgments when providing emergency care in the absence of a physician. Additionally, certified athletic trainers (ATCs) can be held responsible for proper screening and conditioning, equipment selection and fitting, documentation of athletic injuries, and implementing treatment and rehabilitative procedures as advised by the physician.

Not one of the public schools had a certified athletic trainer on staff. Six of the 21 who claimed to have an ATC actually have a noncertified trainer. In the absence of an ATC, 13 of the schools have a coach who assumes the role of an athletic trainer; 2 schools rely on paramedics in the community as trainers. The coaches who served as athletic trainers in 10 schools had received instructions at one time or another in the prevention and care of athletic injuries by a certified athletic trainer. Emergency first aid supplies were available at 20 of the schools. The equipment included, but was not limited to, a standard first aid kit at 14 schools, ice packs at 13, a stretcher at 12, air splints at 14 and a spineboard at 8.

Although some first aid equipment was available, only 3 of the public schools have all of the coaches certified in providing basic first aid. Of the public schools examined, only 14 had a system to record and document athletic injuries.

**The role of other personnel**

Since a full-time ATC was not available in any of the public schools, the person responsible for the prevention and care of athletic injuries was the coach in 17 schools, the noncertified athletic trainer in 2, the student trainer in one and the nurse in one. Follow-up care and evaluation of the high school athlete was provided by the coach in a third of the schools. The decision about whether the athlete can return to practice and/or competition was made by the family physician at 18 schools, by the team physician at one and by the coach at 2.

Paramedics are present or on call at all home events at 2 schools out of 21. At 10 public schools no ambulance service was provided on the premises or on call at any sporting event. Ambulance service, either on the premise or on call, took place only during football season in 9 schools at varsity football games and at 8 schools for junior varsity football games.

## Discussion

Currently, our society is holding coaches and school systems increasingly accountable for "preventable" injuries. A high school player a few years ago was awarded $6.3 million in a claim against the Seattle School System and the coach, after sustaining quadraplegia when he lowered his head while running with the ball to ram a tackler[2]. The Seattle School District was found negligent in its failure to certify or formally evaluate coaches, require coaches to attend clinics, properly monitor injury rates, and write sufficient sports safety regulations or guidelines.

The prompt and high percentage (100%) of returns to our questionnaire indicates marked interest in the health care of athletes. The response demonstrated the lack of qualified sports medicine personnel in the public schools of the OIA. During the majority of games and at virtually all of the practices, responsibilities for which the ATC is uniquely prepared, are left to the coaches, most of whom are untrained in these areas. Apparently unaware, those athletic directors at 8 schools who stated they have a certified athletic trainer on their staff, actually have a person who is not an NATA-certified athletic trainer.

In the State of Hawaii, major colleges and some of the private high schools have NATA-certified athletic trainers to implement injury prevention, and to triage potential serious injuries. The American Medical Association recognizes NATA-certification and the ATC is considered an allied health care professional. In stark contrast to the colleges and private high schools, not one of the public high schools in the OIA has a certified athletic trainer on staff.

When one considers medically qualified resources, the logical choice is the ATC. He or she can be the right arm of a physician tending to specific needs of the athlete. The ATC not only can provide prompt recognition and treatment of injuries but can also monitor rehabilitation.

Caring for the athlete is a complex responsibility which is currently loosely organized in most school districts, including the OIA. An ideal solution would be the hiring of certified athletic trainers for each high school. Only by increased awareness on the part of school administrators and restructured priorities and competent health personnel, can all public high school athletes be assured of proper prevention of and immediate care of athletic injuries.

As a result of our survey of the current status of health care in the OIA, our recommendations are:

(1) That certified athletic trainers be hired at the high schools in the State;

(2) that coaches be certified in first aid and CPR;

(3) that a State approved certification process which would provide minimal standards in the care and prevention of athletic injuries be implemented. (Some states in this country have created athletic training licensure boards to set the minimal standards for individuals wishing to serve as athletic trainers. The state of Hawaii is not one of them.)

The families of Hawaii deserve to have their children adequately protected and cared for while they are participating in high school sports programs. This study shows that they are not receiving it.

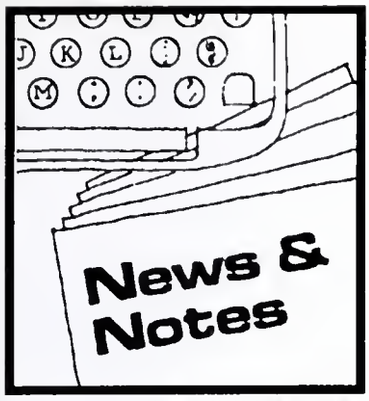
ACKNOWLEDGEMENTS

Special thanks to Mr Hugh Yoshida, associate athletic director of the University of Hawaii, Mr Dan Hironaka, athletic director of Aiea High School, and Ms Kay Bicoy, assistant athletic director of Pearl City High School, who fostered our interest in examining the care of the high school athlete. A thank you is extended to Mr Alan I Lee, MS PT OCS Director of Therapy Specialists, Inc, for his financial assistance in this project.

REFERENCES

1. Powell J: Injury toll in prep sports estimated at 1.3 million. Athletic Training, *JNATA* 24:360-373, 1989.
2. Adams, SH: Coaches negligence target of litigation. Interscholastic Athletic Administration, Fall 1982.

■




Henry N. Yokoyama, MD

## Conference Notes

(From a lecture by Victor Vestes on 9/2/91 entitled, "Postprandial Trio")

Treatment of mild hypertension:

a. Avoid diuretics (changes lipid pattern);
b. Try non-drug therapy first (especially weight reduction);
c. Abandon stepped care for calcium channel blockers
   1. DBP 90 to 104 — usually low renin hypertension ... use calcium channel blockers
   2. DBP 105+ — Usually high renin hypertension with high Angiotensin II. Use ACE inhibitors (which prevent conversion of Angiotensin I to Angiotensin II)

Re Calcium Channel Blockers: For long-term hypertension, use either verapamil or diltiazem, which lowers both heart rate and blood pressure. For short-term hypertension, use nifedipine or nicardipene (eg, ER therapy).

Proposal: "Where diuretics were used in the past, CCBs may be used now."

"Dyazide is the biggest placebo in the world."

## Conference Humor

A man had terrible headaches. He went to see doctor after doctor. When the doctor had tried everything and nothing worked, he would advise castration. The man was not happy with this solution. After months of suffering, his wife suggested that he see one last doctor and accept his recommendation. The doctor also recommended castration, so the man had surgery and the headaches disappeared...

One day he decided to get a new hat and dropped in to see his haberdasher who asked for his hat size. "I wear a 7-1/8." "If your hat size is 7-1/8, you have a size 15 neck, 32 sleeve, 32 waist and you wear size 34 jockey underwear," declared the haberdasher eruditely. "You got everything right, except I wear size 32 jockey shorts." The haberdasher was aghast: "No! No! No! You can't wear size 32 shorts ... You'll get terrible headaches!"

* * *

The stranger in town watched a unique

*(Continued)* ➤

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funeral procession. Two hearses followed by a man with a dog on a leash. Behind him followed 75 men in single file. "Who died?" the stranger asked. "My wife and mother-in-law." "How did they die?" "They were bitten by this dog..."

The stranger brightened visibly. "Do you mind if I borrow your dog?" "Sure, but you will have to get in line with the rest..."

[This outstanding lecturer from Case Western Reserve was the visiting professor here for a week. Victor says, "In my next life I want to be a standup comedian."/Ed]

## Explicit Dialogue

(Taken from an AIDS/STD Project brochure sponsored by the State of Hawaii Dept of Health)

ENJOYING THEM TOGETHER

*If your partner says:*

"Condoms aren't romantic."

"Don't you trust me?"

"I'm taking birth control pills, so we don't need a condom."

"I feel ashamed to buy condoms."

"I don't like to use condoms. It doesn't feel as good."

"But we've been having sex without condoms."

*You can say:*

"Let me show you how romantic they can be."

"It is important to me we are both protected."

"Pills won't protect us from sexually transmitted infections like AIDS."

"Let's go to the store together and find the right one for us."

"It feels different, but worrying about sexually transmitted diseases and AIDS isn't fun. Let's use condoms and enjoy ourselves."

"Condoms can prevent sexually transmitted infections. Since we care about each other, we should be careful."

## Prostate Specific Antigen (PSA)

For years, urologists have been measuring a protein secreted by the prostate gland called the prostate specific antigen (PSA) to monitor the progression of prostate cancer. More recently, however, Dr William Catalona of Washington University has demonstrated through his work that this laboratory test can be a screening guide for prostate cancer if it is carried out in conjunction with the digital rectal examination.

The Hibritech method is the most common PSA test used by Hawaii laboratories. With this method, the normal value is less than 4.0 ng/ml. In patients with low titer elevation (4 to 10 ng/ml), 1 out of 4 will have positive biopsies for prostate cancer. In patients with values over 10 ng/ml, 2 out of 3 will have positive cancer biopsies.

It should be noted that infection (prostatitis) or an enlarged prostate gland (prostatic hypertrophy) also cause elevations of the PSA.

## Miscellany

Did you hear about the turtle who was mugged on Kalakaua Avenue by a gang of snails? The policeman responding to the call asked, "Did you recognize any of them?" The turtle replied, "No ... it happened so fast."

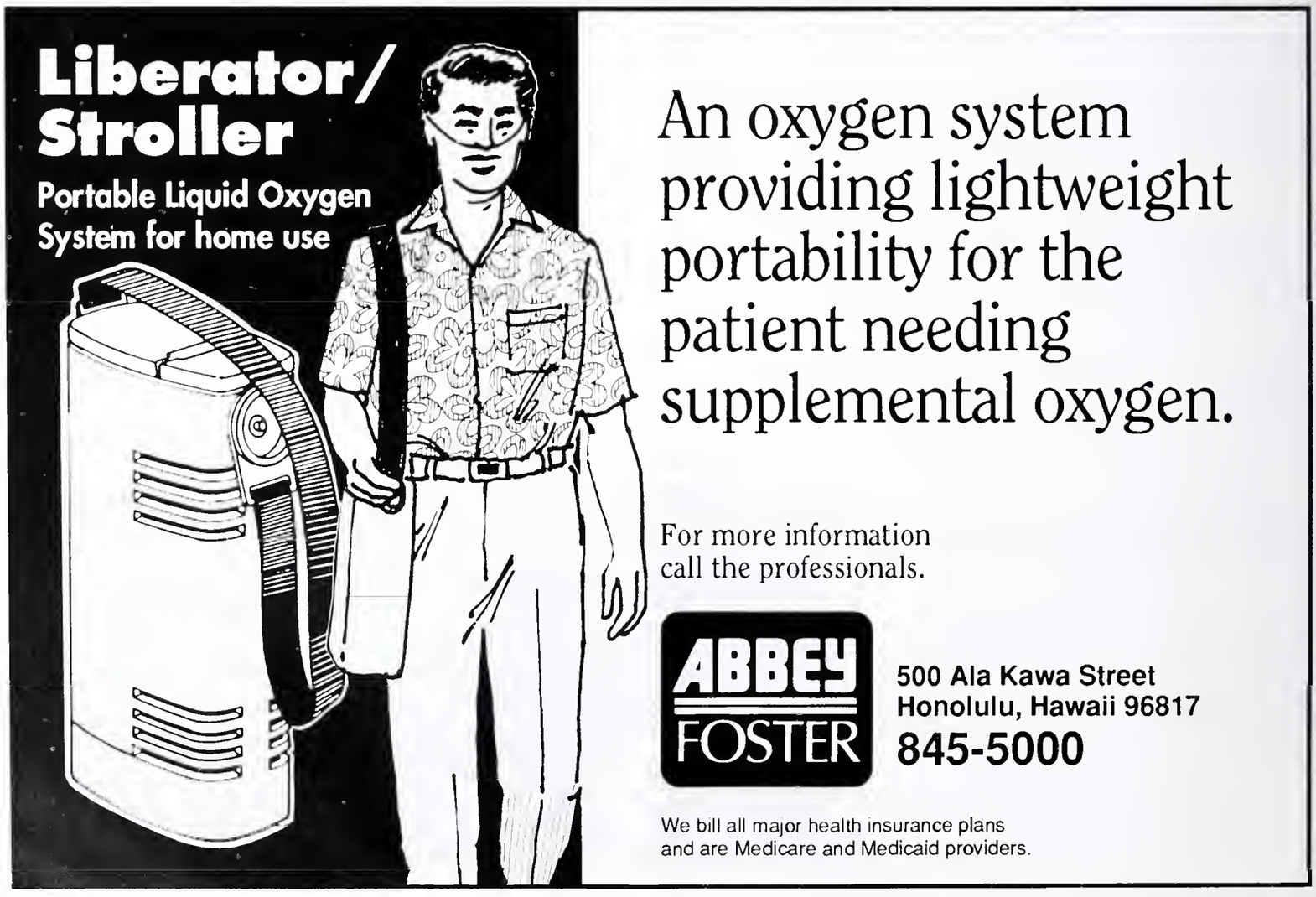
(As told by Cas Jasinski)

* * *

Our humorist friend A.U. says a urologist uses two fingers for a rectal examination in case the patient wants a second opinion...

## Professional Moves

In July: Orthopod Larry Gordon announced his retirement from active practice to continue as emeritus surgeon and consultant with the Orthopedic Associates; Chris Miura joined as associate in the practice of OB-GYN with Murray Berger, Neal Winn and Ronald Berman at Kapiolani Medical Center; general surgeon Eric Matayoshi opened his office at Kuakini Medical Plaza, Suite 412 and Queen's POB II, Suite 805; cardiologist Michael Yee relocated his office to Kailua Professional Center II, Suite 317; Allison Shigezawa opened her office in OB-GYN at Queen's

POB II, Suite 406; and internist Helen Ing opened her office at Kailua Professional Center II, Suite 317.

In August: Plastic surgeon Robert Peterson opened his office at Kapiolani Medical Center Physicians Bldg, 1319 Punahou St, Suite 1040; Russell Wong opened his practice in adult and pediatric infectious diseases at 321 North Kuakini St, Suite 811; and hematologist-oncologist Jonathan Cho associated with the Hawaii Hematology Oncology at Queen's POB II, Suite 307 and Castle Professional Center, Suite 311.

In September: Straub announced the following new physicians: Jane Daniel in OB-GYN; Mark Grattan in cardiovascular surgery; Ahmad Hakemi in emergency and urgent care; Jenny Stone in dermatology; Gordon Trockman in psychiatry and Lance Yokochi in occupational medicine. The Kauai Medical Group added two new physicians: Suzanne Nelson in pediatrics and Andrew Boyd in emergency medicine.

## Life in These Parts ...

An intriguing motto on the wall of the driver's test station at the Kalihi Police Station reads: "We the willing, led by the unknowing, are doing the impossible for the ungrateful. We have done so much for so long with so little, we are now qualified to do anything with nothing."

KUMU Commentary: "Remember when environmental awareness was a posted sign that read: 'PLEASE KOKUA. KEEP OFF THE GRASS'."

## Conference Notes

"Withholding and Withdrawal of Life Support from the Critically Ill" — Lecture by visiting professor John Luce, associate professor of medicine and anesthesia, University of California at San Francisco on Oct 11 at Mabel Smyth.

Definition: "Processes by which medical interventions are not given to or are removed from patients with the expectation that they probably will die."

"All ICU patients die during withdrawal and withholding life support either because a decision to not resuscitate has been made in advance or because vigorous resuscitation will not be provided indefinitely."

"In brain-dead patients, life support is organ support."

"What does life support actually support: a) Biological life; b) sentient life; or c) worthwhile life."

Karen Ann Quinlan Case (1976): Established the right to refuse treatment that would not result in sentient life and allowed substituted judgment for patients (New Jersey Court).

Barber v. Superior Court (1983): Advanced the concept of sentient life and the use of substituted judgment by family members and introduced the distinction between benefits and burdens of therapy.

Cruzan v. Missouri (1990): Allowed

*(Continued on page 402)* ➤


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states to require support in absence of clear and convincing evidence of patient wishes. Missouri Supreme Court agreed with the nursing home instead of the parents. The Supreme Court upheld the decision.

Majority Opinion in Cruzan Case (Justice Rehnquist): State should protect biological life; choice between life and death is personal; surrogate decision makers not always ideal or available.

Minority Opinion in Cruzan Case (Justice Brennan): Right to refuse more important than state's interest in protecting life; decision may lead to more deaths; Missouri out of touch with reality.

Effect of Cruzan Case: Simply upheld Missouri Law; does not alter decisions or practices elsewhere; affects right of competent patients to refuse; highlights desirability of advance directives.

Status Cardiopulmonary Resuscitation: Originally extended to all patients; rarely effective in elderly or hospitalized patients; resuscitated patients end up in ICU; now not required in terminal patients; code status should be determined early; not an option when not useful.

Do Not Resuscitate Orders: Usually written late during admission; justification often lacking or not recorded; usually followed by less aggressive care

Withholding and Withdrawing Life Support Findings at the U of C, San Francisco:

- Brain death and poor prognosis were the major reasons for withholding or withdrawing life support.
- Patients were most often unable to participate in decision making, but family members were willing to take an active part.
- Advance directives were rarely available and did not significantly shorten time in ICU.
- DNR (Do Not Resuscitate) Orders were almost always written and were crucial turning points in patient care.
- Allocation of resources was never cited as a reason for withholding or withdrawing life support.
- Sedatives and analgesics are frequently given during this process to patients who are not so deeply comatose that they cannot benefit from them.

## Conference Notes

"Current Concepts in Treatment of Anxiety" — Lecture by Harold Goldberg, former lecturer in psychiatry, Harvard Medical School and presently director, State Mental Health Services, Lihue, Kauai. Heard at Plaza Club Oct 9. Sponsored by Mead Johnson.

Anxiety Disorders are divided into: a) phobic disorders (simple, social and agoraphobia with or without panic); and b) Anxiety states, eg, panic, generalized anxiety disorder, obsessive compulsive disorder and post-traumatic stress disorder.

Ddx: Anxiety vs depression vs organic disease (Lean toward depression)

How to assess suicidal intent — Ask: "Have you ever thought of hurting yourself?"; "Do you have a plan? What's your plan?"; "Do you have a gun?"

Suicidal patients: Serotonergic drugs, eg, Desyrel and Prozac are useful.

Xanax is a most addictive drug and a drug not to be prescribed.

Halcion causes antegrade amnesia.

Symptoms Common to Anxiety and Depression:

a. Dysphoric mood
b. Agitation
c. Poor memory
d. Incisiveness
e. Weight disturbances
f. Poor concentration
g. Sleep disturbances
h. Somatic complaints
i. Decreased libido

Pharmacotherapy: In the past antihistamines, barbiturates, meprobamate and, in the last 20 years, benzodiazepines.

"In 1976 I did the first study of buspirone (BuSpar) against diazepam. There is no sedation with BuSpar. It is an anxio-selective drug in that it is not a muscle relaxant or anti-convulsant. It works specifically on aggression and conflict. It is a serotonergic drug and a mild dopaminergic drug. Because it is primarily serotonergic, it also has significant anti-depressant qualities. It seems to lack any dependence potential. There is no euphoria. There is no cognitive and no psychomotor impairment." (Excerpts from a 1990 article by Harold Goldberg entitled, "Modern Treatment Modalities in Anxiety")

BuSpar is a unique drug. Ideal for geriatric patients. Non-addicting. No interaction with alcohol. Side effects: dizziness, headaches. Disadvantage: takes 2 to 3 weeks to work. First week: less irritable; second week: can concentrate better; third week: calmer; fourth week: anxiety better.

Indications: PMS; smoking; obsessive addicts (alcoholics, cocaine addicts, transvestites); suicidal patients; irritable colon; hyperactivity cases; geriatric patients in nursing homes. (Benzodiazepines in elderly cause memory loss, irritability, personality changes.)

## Conference Humor

A bank robber grabbed 3 hostages as he fled in his car. The hostages were all physicians. "Say, I only need one hostage. I'll have to kill 2 of you," the robber declared. The first physician pleaded, "I'm a family practitioner. You know, from cradle-to-grave care. My patients need me." The second physician also had good reason: "I'm a noted cardiologist from the Mainland. I'm here to tell the local doctors about thrombolytic therapy." The third physician spoke up: "Kill me ... I'm an internist. I can't bear to hear another lecture on thrombolytic therapy."

(As told by VP Gordon Ewy at a Friday morning conference at Mabel Smyth in October)

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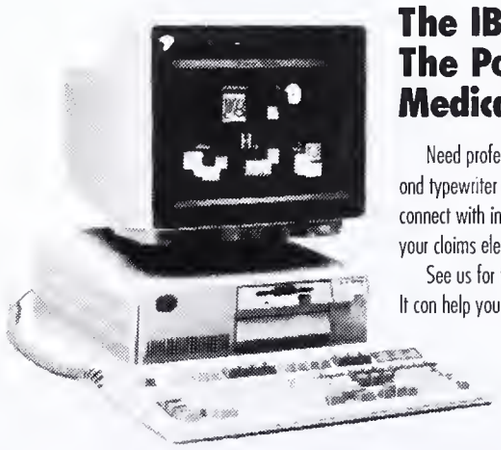


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# Tuberculosis

In this issue of the *Journal*, Richard Frankel MD MPH authors an article as a caveat to physicians to be aware of the increasing incidence of TB in the United States and in our community in particular. To make the point, he cites the case of 2 physicians in the State who "developed" acute TB.

Two cases are a very small cohort, but the portent for more is a concern. Frankel focuses on physicians, but the broader viewpoint should encompass all the other health care givers that are at risk as well, being involved with the care of a population that includes increasing numbers of people with HIV and AIDS, as well as the presence in our community of a large number of Asia-Pacific immigrants.

Since submitting his article, Frankel has given up his post as head of the TB division of the State Health Department. We are concerned that the Division not remain without top guidance for long.

As we go to press, the *Honolulu Advertiser* of 10 September 1991 reports that the State "may drop food-handler TB tests." There is logic in this move — on the basis of past experience, that is — because the benefit did not warrant the cost. However, based on Frankel's warning of a resurgence of viability of *M. tbc* in a population at greater risk, perhaps the program needs to be thoroughly re-evaluated; it should not have been dropped unlawfully, it seems.

As an aside, we are also quite concerned that the DoH has given up, as of earlier this year, the Child Health Conferences statewide. Instead, we've been told that the Public Health Nurses now run "Immunization Clinics" only. To be sure, these are open 5 days a week at Public Health Centers in many locations, but for only 2 hours in the morning. Mostly, both parents work!

The shots or drops are given without a prior check-up by a physician or a nurse practitioner; we do not consider this to be good medical practice. The stated reason for this change in DoH tactics is exemplary in the sense that it is intended to encourage parents to seek a private family physician or a pediatrician for their children: Cal Sia's theme that "every child should have a medical home." However, it seems to us that the build up of obstacles by fractionated care is a major cause of the drop in the numbers of immunized children in our society.

When private physicians who examine children find it nearly impossible to provide immunizations because of the high cost of the vaccines, their short shelf-lives and inadequate insurance reimbursement, then referring the kids to the public immunization centers, the rate of parental compliance drops significantly. This is not the way to go!

This applies equally to the testing for TB. Why was the Tine Test no longer allowed? It was quick, cheap, easy to administer and "painless." A positive could easily be followed-up. The Mantoux is another "dreadful shot!" For a private physician to stock up on the PPD is a financial deficit.

Is this affluent nation so set on dollar deficits that it is trending toward rationing health care already? If so, our priorities are way off!

J I Frederick Reppun MD
Editor

---

# *This Week* at the AMA

**James S. Todd MD**
**Executive Vice President**

**Richard Lewis**
**Editor**

## 22 July 1991

The AMA's Department of Geriatric Health estimates that the over-65 population of the United States, with its increased incidence of disease and disability, will more than double, from 28 million in 1985 to 64 million by the year 2020.

Because of a concomitant decline in birth rate by that time, 1 in 5 Americans will be of retirement age, according to the AMA.

We gather from the above that the other 4 of 5 Americans will be burdened not only by raising kids and putting them through college, but also burdened by the care of their elders — not only their parents but also their grandparents!

As for the physicians in practice in the second millenium, most will have to be geriatricians!

J I Frederick Reppun MD
Editor

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**BRIEF SUMMARY**

**Contraindications:** Severe LV dysfunction (see *Warnings*), hypotension (systolic pressure < 90 mm Hg) or cardiogenic shock, sick sinus syndrome (if no pacemaker is present), 2nd- or 3rd-degree AV block (if no pacemaker is present), atrial flutter/fibrillation with an accessory bypass tract (eg, WPW or LGL syndromes), hypersensitivity to verapamil.

**Warnings:** Verapamil should be avoided in patients with severe LV dysfunction (eg, ejection fraction < 30%) or moderate to severe symptoms of cardiac failure and in patients with any degree of ventricular dysfunction if they are receiving a beta-blocker. Control milder heart failure with optimum digitalization and/or diuretics before Calan SR is used. Verapamil may occasionally produce hypotension. Elevations of liver enzymes have been reported. Several cases have been demonstrated to be produced by verapamil. Periodic monitoring of liver function in patients on verapamil is prudent. Some patients with paroxysmal and/or chronic atrial flutter/fibrillation and an accessory AV pathway (eg, WPW or LGL syndromes) have developed an increased antegrade conduction across the accessory pathway bypassing the AV node, producing a very rapid ventricular response or ventricular fibrillation after receiving I.V. verapamil (or digitalis). Because of this risk, oral verapamil is contraindicated in such patients. AV block may occur (2nd- and 3rd-degree, 0.8%). Development of marked 1st-degree block or progression to 2nd- or 3rd-degree block requires reduction in dosage or, rarely, discontinuation and institution of appropriate therapy. Sinus bradycardia, 2nd-degree AV block, sinus arrest, pulmonary edema and/or severe hypotension were seen in some critically ill patients with hypertrophic cardiomyopathy who were treated with verapamil.

**Precautions:** Verapamil should be given cautiously to patients with impaired hepatic function (in severe dysfunction use about 30% of the normal dose) or impaired renal function, and patients should be monitored for abnormal prolongation of the PR interval or other signs of overdosage. Verapamil may decrease neuromuscular transmission in patients with Duchenne's muscular dystrophy and may prolong recovery from the neuromuscular blocking agent vecuronium. It may be necessary to decrease verapamil dosage in patients with attenuated neuromuscular transmission. Combined therapy with beta-adrenergic blockers and verapamil may result in additive negative effects on heart rate, atrioventricular conduction and/or cardiac contractility; there have been reports of excessive bradycardia and AV block, including complete heart block. The risks of such combined therapy may outweigh the benefits. The combination should be used only with caution and close monitoring. Decreased metoprolol and propranolol clearance may occur when either drug is administered concomitantly with verapamil. A variable effect has been seen with combined use of atenolol. Chronic verapamil treatment can increase serum digoxin levels by 50% to 75% during the first week of therapy, which can result in digitalis toxicity. In patients with hepatic cirrhosis, verapamil may reduce total body clearance and extrarenal clearance of digitoxin. The digoxin dose should be reduced when verapamil is given, and the patient carefully monitored. Verapamil will usually have an additive effect in patients receiving blood-pressure-lowering agents. Disopyramide should not be given within 48 hours before or 24 hours after verapamil administration. Concomitant use of flecainide and verapamil may have additive effects on myocardial contractility, AV conduction, and repolarization. Combined verapamil and quinidine therapy in patients with hypertrophic cardiomyopathy should be avoided, since significant hypotension may result. Concomitant use of lithium and verapamil may result in a lowering of serum lithium levels or increased sensitivity to lithium. Patients receiving both drugs must be monitored carefully. Verapamil may increase carbamazepine concentrations during combined use. Rifampin may reduce verapamil bioavailability. Phenobarbital may increase verapamil clearance. Verapamil may increase serum levels of cyclosporin. Verapamil may inhibit the clearance and increase the plasma levels of theophylline. Concomitant use of inhalation anesthetics and calcium antagonists needs careful titration to avoid excessive cardiovascular depression. Verapamil may potentiate the activity of neuromuscular blocking agents (curare-like and depolarizing); dosage reduction may be required. Adequate animal carcinogenicity studies have not been performed. One study in rats did not suggest a tumorigenic potential, and verapamil was not mutagenic in the Ames test. Pregnancy Category C. There are no adequate and well-controlled studies in pregnant women. This drug should be used during pregnancy, labor, and delivery only if clearly needed. Verapamil is excreted in breast milk; therefore, nursing should be discontinued during verapamil use.

**Adverse Reactions:** Constipation (7.3%), dizziness (3.3%), nausea (2.7%), hypotension (2.5%), headache (2.2%), edema (1.9%), CHF, pulmonary edema (1.8%), fatigue (1.7%), dyspnea (1.4%), bradycardia: HR < 50/min (1.4%), AV block: total 1°,2°,3° (1.2%), 2° and 3° (0.8%), rash (1.2%), flushing (0.6%), elevated liver enzymes, reversible non-obstructive paralytic ileus. The following reactions, reported in 1.0% or less of patients, occurred under conditions where a causal relationship is uncertain: angina pectoris, atrioventricular dissociation, chest pain, claudication, myocardial infarction, palpitations, purpura (vasculitis), syncope, diarrhea, dry mouth, gastrointestinal distress, gingival hyperplasia, ecchymosis or bruising, cerebrovascular accident, confusion, equilibrium disorders, insomnia, muscle cramps, paresthesia, psychotic symptoms, shakiness, somnolence, arthralgia and rash, exanthema, hair loss, hyperkeratosis, macules, sweating, urticaria, Stevens-Johnson syndrome, erythema multiforme, blurred vision, gynecomastia, galactorrhea/hyperprolactinemia, increased urination, spotty menstruation, impotence.

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To the Editor:

My congratulations to you on the splendid 50th anniversary issue of the *Hawaii Medical Journal!* It is most interesting and so appropriate that it should be dedicated to Harry Arnold Jr MD.

As Edith Bennett, I was managing editor of the *Journal* from 1944 to 1956. When I retired, the Hawaii Medical Association awarded me a lifetime subscription to the *Journal*. I have read it with great interest all these years. [But] Now that Harry Arnold is gone and almost all of my medical friends have retired or died, I should like to release you from the obligation to send me the *Journal* every month. I surely do appreciate all the issues I have had.

I am well and happy, living in this retirement community in Alabama.

Sincerely,
Edith C Robinson

Mrs A W Robinson
Westminster Village #321
500 Spanish Fort Blvd
Spanish Fort, AL 36527

The Editor Replies:

We appreciate the kudos and remember you as Edith Bennett. Thank you very much for updating the history of the *Journal*. We wish you well in your retirement far from Hawaii and have included your current address in hopes that some of your old friends here will write to you.

J I Frederick Reppun MD

---

To the Editor:

The mortality rate from the first recognized subarachnoid hemorrhage (SAH) remains near 50%. Many (up to 70%) have had an earlier unrecognized bleed — "the warning leak".

There remains a need for increased awareness and thus early diagnosis of patients who have had a subarachnoid hemorrhage secondary to cerebral aneurysm leakage or rupture. Surgical therapy can be life-saving.

Bleeding from intracranial blood vessels into cerebrospinal fluid, causing a subarachnoid hemorrhage, has several major causes: hypertension, trauma, congenital vascular anomalies, and aneurysms. The etiology can only occasionally be diagnosed accurately by history alone, eg trauma.

The patient with a subarachnoid hemorrhage needs early diagnosis and appropriate treatment. If the bleeding is from an aneurysm, this may only be diagnosed (proven) by CT brain scanning and/or cerebral angiography. It may be suspect after lumbar puncture. Hypertensive patients may also have aneurysms that bleed.

The neurosurgical emphasis today is on very early confirmative diagnosis and early surgery for selected cerebral aneurysms.

As soon as the diagnosis of SAH is made or suspected, the patient should be admitted directly to or transferred to a neurosurgical intensive care unit for cerebral and cardiac monitoring, CT scanning and cerebral angiography, all to be performed optimally within a few hours after the hemorrhage. If surgery is felt to be appropriate, it may best be performed within the first 48 hours after hemorrhage.

The timing of surgery remains an individual clinical decision. The surgical goal is obliteration of the aneurysm by clipping or ligation, with preservation of all normal vessels. This can be curative. Many clinical factors will determine the appropriateness of early versus delayed surgical treatment, but currently the emphasis is on early.

Thus, the patient, regardless of age, with a sudden or rapidly progressive headache, with or without loss of consciousness, and with or without significant nuchal rigidity must be considered as having had a subarachnoid hemorrhage until complete prompt evaluation has been performed and no hemorrhage and/or aneurysm has been demonstrated.

I hope this "current concept" of a lethal but curable cerebrovascular disease (aneurysm) will be of value.

William M. Hammon MD
Department of Neurology and Neurosurgery
Straub Hospital and Clinic

The Editor Replies:

We appreciate very much your letter above and commend you exceedingly for the effort; we do all, indeed, need to be made more alert to this entity, rare though it is. Thank you very much for defining so clearly a policy we all need to follow.

J I Frederick Reppun MD
Editor

**SEASONS GREETINGS**
from the staff of the
HAWAII MEDICAL ASSOCIATION

# HMAA President's Message

1991 has been an exciting and eventful year for the HMA Auxiliary. Launching my year as President, in January we welcomed the AMA Auxiliary President Norma Skoglund at a luncheon.

We were fortunate to have a visit from the AMA President Dr John Tupper in February, and we had a great program in March when North Carolina's John-Henry Pfifferling visited Hawaii and spoke to Auxilians and spouses in his humorous style about the medical marriage.

On March 28, Governor John Waihee proclaimed March 30th as Doctors' Day in Hawaii. This was followed by Resolutions being read in both the State House and Senate. The HMAA mailed Doctors' Day Buttons to all physicians to wear.

This year we garnered more AMA-ERF funds than we have for quite some time thanks to the efforts of our AMA-ERF chair, Edith Don of Maui. We combined the AMA-ERF sharing card and fund-raising effort with Doctors' Day on March 30.

A coalition for a tobacco-free Hawaii was formed to respond to the Philip Morris Company Bill of Rights Tour scheduled to be in Hawaii in May. Coalition Auxiliary members helped distribute "Live Free — Tobacco Free" buttons and T-shirts.

MADD, HMA, the medical community, and the Auxiliary mobilized at the end of this year's legislative session to protest the passing of a revised Drunk Driving Bill requesting the public to respond, and for the Senate President and the Governor to reconvene the Senate in a special session to correct a very serious omission in the law that was passed. This proved effective and successful!

On September 15 the Auxiliary also helped at a youth wellness and fitness fair, "Friends, Fitness and Fun", held at Thomas Square. This fair was organized by the John A. Burns School of Medicine, Friends of the Medical School, and focused on appropriate exercise and nutrition for youth ages 5 to 12. HMA and AMAA members and others were also sponsors and volunteers at this event

Another project was our annual fund-raising fashion show luncheon, having donated $7,000 the past year to the Hawaii Family Stress Center for the Prevention of Child Abuse. This project is a joint venture with our Auxiliary assisting the Auxiliary to the Honolulu County Medical Society. This year the luncheon and fashion show, entitled "Autumn Spice", was held on Sunday, September 29, at the Ala Moana Hotel Ballroom. Prior to the luncheon, there was a boutique marketplace that featured unique gift ideas. Vendors donated $50 each to the AMA-ERF. The luncheon was a sell-out! Over 45 tables sold. We hope to present bigger checks to the Hawaii Family Stress Center and AMA-ERF than ever before!

The HMAA Annual Meeting was held again in conjunction with the HMA Annual Meeting in Kauai, on October 12,1991 at which time the incoming president, Gwen Fu, was installed. As my year as President comes to a close I will take many fond memories with me and I would especially like to thank everyone who dedicated so many hours and efforts towards all of our projects during an exciting and productive year.

Maureen Lau

# Committee Report

## Committee of Senior HMA Physicians

The Committee held a special meeting on Friday 24 October to hear testimony from important agencies dealing with the mental health problems of Hawaii's youth.

Members present included E Adams, S Allison, A Brault, R Brault, A Burden, F Chinn, R Dusendschon, Chair C Florine, W Hansen, K Jones from the Hawaii Council of Child Psychiatry, I Larsen, R Lee, P McCallin, OD Pinkerton, W Quisenberry, F Reppun, W Sage, R West, J and R Wong, S Yamauchi and J Estioko of HMA staff.

Winona Rubin, Director of the DHS, ran through quite a list of agencies in her department that dealt with children and youth. She was followed by Masaro Oshiro of the DoH, speaking for the State Hospital and the mental health program that included that of children on an out-patient basis, and the alcohol and substance abuse program.

Wayne Matsuo, Director of the relatively new Office of Youth services under the Governor, described the wide spectrum of issues under his jurisdiction. However, there was a paucity of evaluation services and little that could be done to implement therapy primarily for lack of adequate funding for the Hawaii Youth Center facility. Admission of cases to institutional facilities was severely restricted due to a lack of beds, particularly since the Salvation Army had had to close its facility for lack of monetary support. The average cost of caring for a delinquent 15½-year-old is $100,000 per annum. He mentioned the Youth-at-Risk program. He deplored the failure at present of adequate intervention at pre-adolescent levels when a greater therapeutic impact might be expected. His OYS was trying its best to tackle the problem without sufficient staff or funding and hoped the Legislature would come through at its next session, asking the HMA members please to do what they could to lobby strenuously at that session.

Ken Ling, speaking in the place of Judge Healey of the State's Family Court Services, who was unable to be present

*(Continued)* ➤



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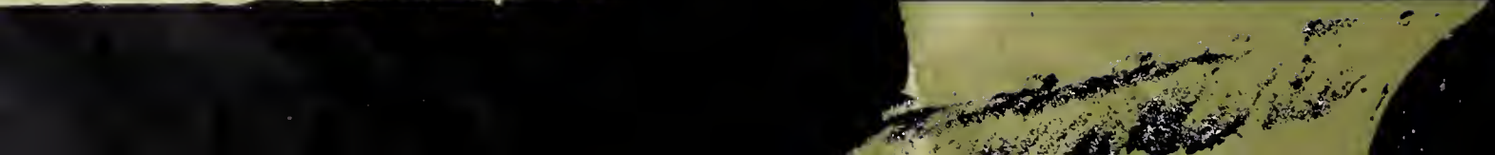
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because he was presiding in a case, explained why the Court had been unable to contribute enough to keep the SA Home open, again for a lack of funding. The Court had succeeded, with the help of other agencies, to place 18 juveniles in 2 group homes. He also announced that the DoH was to provide a psychologist for the Detention Home.

Mark O'Donnell MPH, the Executive Director of the Mental Health Association in Hawaii, mentioned that there were some 6,600 emotionally disabled children and 35,000 children who will need therapeutic services in Hawaii. He too deplored the lack of adequate funding for much needed care and treatment ... large gaps in services existed ... "the DoH and the DoE do not communicate with each other very well" ... 90% of the kids are not served. Rep Dennis Arakaki has been most helpful at the Legislature. But "Legislators are not particularly responsive to this apparent community need," O'Donnell opined. In spite of Arakaki's efforts, the Legislature appropriated only $2.5 million out of a requested $24 million!

Psychiatrist Neal Mazer MD, who was named division chief of Child and Adolescent Mental Health Division of DoH, contributed the thought that the failure of adequate parenting was the primary cause of youth taking the wrong fork in the road of life. He had noticed a lack of continuum of services to the mentally ill in Hawaii.

Ms Rubin summed it all up succintly: "It is costing Hawaii $400,000 for each of 4 kids to be cared for adequately on the Mainland, because there are no facilities for their care in Hawaii!"

By their interest and their questions posed to the guest speakers, it was obvious that the HMA Committee of Senior Physicians was much concerned; there was a feeling among the members that the HMA needed to get actively involved in helping to resolve the problem of coordinating the need for adequate evaluation and treatment of the children and youth at risk of mental illness in our State.

J I Frederick Reppun MD, reporting


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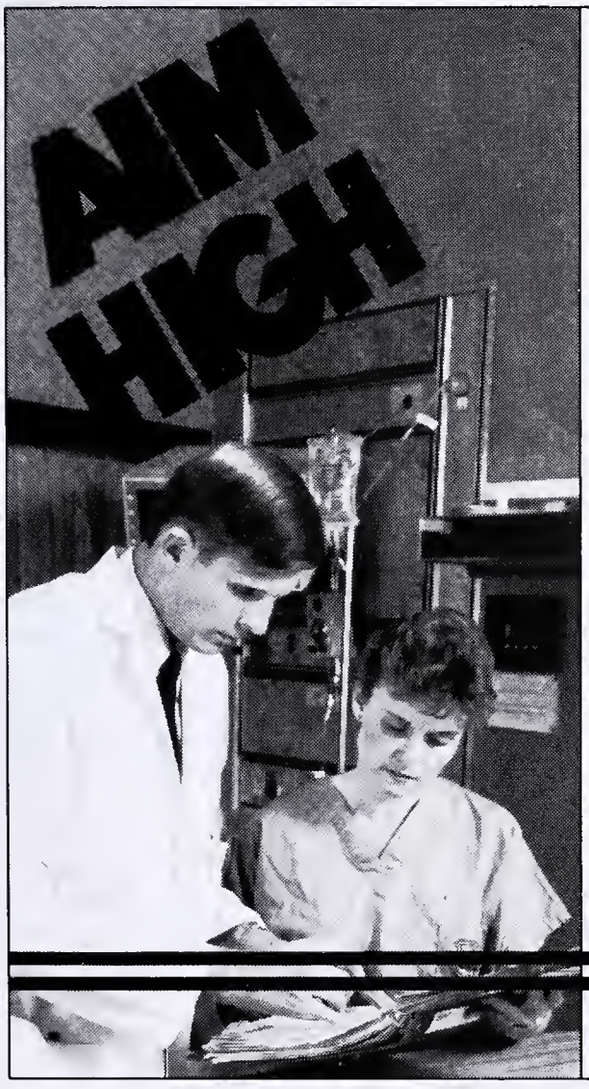
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AIR FORCE

# Caveat Doctor! Tuberculosis in physicians

Richard I Frankel MD MPH

*Physicians long have been a high-risk group for developing tuberculosis. The progressive decline in the incidence of tuberculosis in the United States over most of the second half of the 20th century led to less tuberculosis and less awareness of tuberculosis among physicians. Recent changes, however, have led to an increase in the incidence of tuberculosis in the U.S. and may lead to more physicians being affected. Two physicians in Hawaii were diagnosed as having active tuberculosis in 1990. Physicians should take steps to prevent its spread and should consider the disease in the differential diagnosis when physicians or their patients are ill.*

The relatively high incidence of tuberculosis (TB) in physicians has been recognized for many years. There was a marked reduction in the incidence of TB in the general population between 1940 and 1984, resulting in physicians being less familiar with its signs and symptoms. However, there has been a recent increase in the incidence of tuberculosis in the U.S.

## Case reports

(Note — some information has been intentionally omitted to preclude identification of the individuals by their colleagues.) The first case, a Hawaii-born man in his 50s, presented to his physician with a one-year history of anorexia, non-productive cough and weakness. He did not seek medical attention until his weakness became severe, and he developed fever, night sweats and impairment of cognitive function. His past history was unremarkable except that he had a positive tuberculin skin test as a medical student. He was not aware of any previous abnormal chest X-ray, although he had not had an X-ray for a prolonged period of time. He never had any medical follow-up for his positive skin test and had never taken isoniazid preventive therapy. There was no history of recent contact with TB. He was hospitalized because of his acute illness.

His chest X-ray showed extensive infiltrates throughout the left lung. Arterial blood gas analysis while breathing room air showed pH 7.51, pCO2 27 mm Hg, and pO2 79 mm Hg. He underwent both Computerized Axial Tomography (CAT) scanning of the brain and lumbar puncture (LP) to evaluate his abnormal mentation. Both tests were normal. The initial sputum smear showed 3+ acid-fast bacilli (AFB). Routine culture of the sputum yielded no pathogens. Anti-TB treatment was initiated along with intravenous fluids. He improved markedly and was discharged after 4 days in the hospital. His sputum culture was subsequently positive for *Mycobacterium tuberculosis (M. tbc).*

He continued his improvement as an outpatient, symptomatically returning to normal over a period of months. Because of his severe illness and persistently positive sputum smears, he remained away from work for a number of months. His sputum culture did not convert to negative until the 4th month of therapy, in spite of full susceptibility of the isolate of *M. tbc* to the drugs and good compliance with therapy. Treatment was continued for a total of one year.

His chest X-ray shows persistent abnormality of the left lung. Epidemiologic studies did not reveal any evidence of transmission to household or workplace contacts.

The 2nd case, a U.S. mainland-born retired physician in his 80s, had lived in Hawaii for decades. As a medical student, he had had evidence of a pulmonary parenchymal calcification. At an unknown time subsequently, he was noted to have fibrotic densities in the lungs which had not changed over a period of many years. He could not recall when he was first noted to have a positive tuberculin skin test. He had never taken isoniazid preventive therapy. He had had no recent contact with TB.

In the fall of 1989, he developed fever and cough and consulted a physician when he developed hemoptysis. His chest X-ray showed no change. A sputum smear showed no AFB, although culture was subsequently positive for *M. tbc*. By the time the positive culture was reported, the patient had recovered clinically and the accuracy of the culture was doubted. He underwent bronchoscopy with no abnormality being noted. Bronchoscopic washings were negative for AFB on the smear but culture was positive for *M. tbc* as was one additional sputum specimen. He was treated with anti-TB chemotherapy and remains clinically well. His chest X-ray did not change during the course of his illness. His sputum culture converted to negative.

## Discussion

In 1990, there were 196 verified (Centers for Disease Control criteria) cases of TB reported by the State of Hawaii Department of Health. Of these, 165 were foreign-born individuals. Of the 31 born in the United States, 23 were born in

Department of Health
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Address for reprints:
Richard I Frankel, MD MPH
Department of Medicine
University of Hawaii, John A Burns School of Medicine
1356 Lusitana Street, 7th Floor
Honolulu, Hawaii 96826

Hawaii and 8 in other parts of the U.S. Two of these 31 were physicians, accounting for 6.5 percent of all U.S.-born cases of TB in the State. The total incidence rate for the State was 17.9 cases per 100,000. The rate for Hawaii-born individuals was 3.2 per 100,000, virtually the same as for those born in other parts of the U.S. Based on a total of about 2,500 physicians in the State, the rate for physicians was 80 per 100,000, near the 112.8 per 100,000 rate found in Hawaii's "high-risk" immigrant population. The risk for physicians was approximately 24 times the risk for the nonphysician U.S.-born population.

Although the case numbers in Hawaii are small and the rate and risk ratio noted for physicians may not be representative of other time periods, there is abundant evidence that physicians are a high-risk group for developing TB. In the past, most medical students and physicians-in-training were infected with *M. tbc*. The American Hospital Association Council on Professional Practice stated in 1946 that, with regard to medical students: "The incidence of infection and disease rises abruptly at the start of their clinical years (contact with patients)"[1]. The Council noted an even higher risk of disease in house officers and junior staff members, with infection rates of 75% to 100%.

Although the decrease in TB in the 1940s through 1984 along with the introduction of effective chemotherapy, resulted in less risk to physicians, recent changes in TB epidemiology are likely to result in increased physician exposure to TB. Patients with TB are treated in general rather than special treatment facilities. Most physicians see few if any cases of TB and often do not suspect the diagnosis. Craven et al[2] found a 6-fold increase in the tuberculin skin test conversion rate among hospital personnel and students exposed to patients with clinically unsuspected TB as compared to those without such exposure. Failure of the physician to perform tuberculin skin testing and misinterpretation of chest X-rays were common factors leading to a delay in diagnosis and prolongation of the period of exposure in health-care providers.

TB has long been recognized as a disease of the elderly and this remains true today. The number of elderly in the population is increasing, resulting in more at-risk individuals. Clinical presentation may be atypical in this age group[3], increasing the risk of transmission to health care personnel.

Finally, physicians who were previously infected with *M. tbc* are at particular risk of developing TB as they become elderly.

Newer methods of diagnosis and treatment of other diseases have increased the potential for physicians becoming infected. Patients on ventilators have been reported as being capable of transmitting nosocomial TB to their care givers[4], as have *M. tbc*-infected AIDS patients receiving aerosolized pentamidine[5]. The Human Immunodeficiency Virus (HIV) epidemic has contributed greatly to the post-1984 increase in the incidence of TB in the United States[6] and has had some impact in Hawaii[7]. The increased incidence of TB, an atypical presentation in some patients with AIDS, and measures such as aerosolized pentamidine therapy may all contribute to increased risk among physicians. In addition, physicians themselves who may have been infected with HIV have a greatly increased likelihood of developing TB[8].

The 2 physicians described in this report demonstrate some of the problems associated with the failure to diagnose TB in a timely manner. The first case had a severe systemic illness that included impairment of cognition. The latter could have affected his medical practice as well as every other aspect of his life. Fatality rates of 25% to 66% over a period of 18 months to 5 years have been reported in those with untreated, smear-positive TB[9]. He underwent the expense and associated risk of hospitalization, CAT scan and LP. He was unable to work for several months. There was a risk of transmission of disease to others, although this did not occur. The 2nd case underwent bronchoscopy, an invasive and expensive procedure. Both physicians required multi-drug chemotherapy, increasing the risk of adverse effects in comparison with single drug preventive therapy.

Isoniazid has been shown since the early 1960s to be effective in preventing the progressive course of TB disease in those infected[10]. The protection is probably lifelong[11]. Physicians should be aware of the indications for isoniazid preventive therapy, for their patients and for themselves[12].

## Recommendations

To reduce their risk of developing active TB, physicians should take the following steps.

*A. Reduce the risk of acquiring new TB infection.*

1. Consider the possibility of TB in the differential diagnosis of your patient or yourself.
2. Be familiar with local TB epidemiology.
3. Know the tuberculin skin test status of the patient.
4. Order a chest X-ray on high-risk patients with new pulmonary symptoms, who fail to respond to treatment for pneumonia, and have a risk factor for TB.
5. Order a sputum examination for AFB in suspicious cases.
6. Isolate the patient until the diagnosis has been ruled out.

*B. In physicians who already have TB infection.*

1. Be aware of the indications for prophylactic therapy.
2. Physicians with negative skin tests should have periodic skin tests done.
3. Physicians with positive skin tests who have not taken anti-TB chemotherapy should have frequent chest X-rays at the very least.
4. When taking isoniazid preventive therapy, take it regularly and for a sufficient period of time.

## Conclusions

TB has long been a disease that is far more likely to affect physicians than the population-at-large. Though the incidence of TB in physicians has decreased as it has decreased in the general population, TB still remains a problem for all health-care providers. Even if the rate of new TB infections among physicians decreases, there remains a pool of physicians already infected with *M. tbc* who remain at risk of developing active TB. Recent changes have resulted in an increase in the number of cases of TB in Hawaii and in the rest of the United States. This increase will result in increased contact of physicians with individuals who have communicable TB. There are effective control measures available which reduce the risk of infection. There is also effective therapy available for those

*(Continued on page 420)* ➤

# Psychiatry and molecular genetics: A paradigm shift

Jerry J Dowling MD*
Viji Patrick MD*
Jan T Fujita BS*

*The late 20th century is witnessing an explosion of biomedical knowledge in the discipline of molecular genetics. In this regard many medical specialties will be transformed in terms of diagnosis and treatment. The technology and the recent clinical research in psychiatry is one of these.*

## Introduction

A young man, oldest of 2 siblings, was admitted to the hospital at the age of 16 with a history of command hallucinations, paranoid ideation and agitated behavior. Some years later, his sister, who was 19-years-old, was admitted for treatment of hallucinations. One of their parents had been hospitalized with a psychiatric illness. Though their diagnosis of schizoaffective disorder has not been a part of recent genetic studies, in all probability Deoxyribonucleic acid (DNA) technology will be used in the coming century to define this illness.

This article will outline the interface of DNA technologies with psychiatric disorders, review some of the chromosomal findings in specific psychiatric diagnoses and discuss perspectives on organizing the increasing amount of DNA studies directly or indirectly involved in the practice of psychiatry. Numerous authors have noted various aspects of the use of DNA technology in psychiatry[1,2,3,4], but have not emphasized what appears to us to be a marked shift in the paradigm.

Psychiatry has witnessed many shifts in paradigm over the years — from "mind" to "community" and finally to "brain." These changing conceptional models have been well noted by Eisenberg[5], Lipowski[6], and Andreasen[7]. Post World War II psychiatry in the United States was dominated by psychoanalytic theories. Although Grinker[8] noted in 1963 that psychiatry was riding madly in all directions, academic psychiatry was focused on the "mind" and its exploration through psychoanalysis. In the same year, a federal government initiative created "community" psychiatry, which divided the nation into geographical catchment areas, where mental health clinics were established to treat ambulatory psychiatric patients. Around this time, the dopamine hypothesis of schizophrenia appeared. Hence, reflected in the psychiatric literature of the past 3 decades, the paradigms of "troubled mind," "catchment" areas, and a "broken brain" have appeared.

We suggest that the arena of investigation has shifted to "faulty genes." This represents a reconceptualization of the pre-Freudian 19th century focus of psychiatry, the "cell," but at a level of molecular sophistication unimagined before the advent of the electron microscope, Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), and now the various DNA technologies.

## Background

Within the past 45 years, the discoveries in molecular genetics have focused research of disease processes down to the gene level, with the isolation of single factors of inheritance. Molecular genetics emerged in 1953 with the revolutionary discovery by Watson and Crick[9]. They identified the double helical DNA molecule, a sequence of 2 polynucleotide chains responsible for carrying all the genetic information transmitted from generation to generation.

Isolation of specific sequences of DNA was made possible with the discovery of "restriction" endonucleases. These bacterial enzymes recognize and fragment the DNA at specific base sequences, producing specific fragment lengths of DNA. These fragments were first isolated by Gilbert and Sanger in 1975, leading to the probability of the determination of the entire human genome.

Recombinant DNA techniques allow the study of DNA segments on a large scale and with great rapidity. With the recent development of the polymerase chain reaction (PCR) technique (1988), specific segments of DNA can be isolated and replicated to over 1 million copies in a few hours. Resultant DNA segments act as probes, used to isolate complementary fragments of DNA from an individual's entire genetic makeup.

By the method of PCR, the specific sequence of DNA is tagged by short DNA segments of known sequence. These segments act as primers in the process of copying the DNA. The DNA is first heated, denaturing it to form single strands. Then, complementary sequences are added to the primer in the solution, along with DNA polymerase and proper bases for DNA formation. The entire solution is then cooled to the proper temperature which allows the primer to anneal to its complementary sequence. This primer, with the DNA polymerase enzyme, initiates the extension of complementary bases, leading to the formation of the specific DNA of inter-

* Hawaii State Hospital
45-710 Keaahala Road
Kaneohe, Hawaii

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est. The result is 2 newly formed DNA segments which are complementary to the 2 original strands of DNA, doubling the total amount of DNA. This process repeats in a cyclical fashion of heating, then cooling the DNA, doubling the total amount of DNA with each cycle.

Edwin Southern in 1975[10] standardized the method of DNA analysis by his "Southern Blot" technique. DNA prepared for analysis was first fragmented by restriction endonucleases, then separated by molecular weight through agarose gel blocks, which allowed no movement of the DNA fragments. The DNA was then denatured to single-strand form. The Southern Blot technique then transferred the DNA from the agarose gel to nitrocellulose paper which held the DNA firmly in place. During the transfer, the nitrocellulose paper lay directly over the gel and was then stacked under layers of blotting paper. Thus, water and DNA were sucked up and lifted from the gel onto the nitrocellulose paper. A radioactively labeled DNA probe exposed to this DNA may now hybridize to its complementary DNA sequence, resulting in the marking of a specific DNA fragment by autoradiography.

Refined techniques and standardization of DNA analysis led to the discovery of consistent abnormalities in the patterns of hybridization. Evidence has shown that, in the DNA of some individuals, use of identical restriction endonucleases and probes generated consistent DNA fragment lengths variable from the norm. This led to the proposal of Restriction Fragment Length Polymorphisms (RFLPs), where alteration to the DNA sequence changed the restriction site and prevented cleavage of the DNA at the usual site. The resultant DNA fragment generated is altered in molecular weight, migrates at a different rate on electrophoresis, and is localized at an alternative position when hybridized with the radioactive probe. The RFLPs have been used more specifically as genetic markers where unique DNA fragments are inherited following simple Mendelian genetic laws. RFLPs may, therefore, represent DNA sequences either adjacent to or specific for a gene linked to a given disorder (character gene).

The formation of linkage studies comes from the theory that RFLPs represent DNA sequences to the character gene. The basis of the study assumes that the closer the approximation of the 2 genes on a chromosome, the more likely those 2 genes will be inherited together. Pedigree studies offer the classical methods of linkage, where the transmission of 2 genes is traced through a minimum of 3 successive generations. By measuring genetic makeup of these 2 genes in each member of the 3 generations, the frequency of recombination between the 2 genes can be calculated, estimating the distance between the 2 genes. In 1955, Morton[11] developed the logarithm of the odds (LOD) score method of linkage analysis. LOD scores can be calculated after 2 generations. It assumes a series of theoretical recombination frequencies.

This revolution in molecular genetics has greatly affected the study of disease. Specific RFLPs have been directly associated with major diseases and have been shown to follow simple Mendelian genetic patterns of inheritance. In 1983 Huntington's disease, an autosomal dominant condition, was linked to an RFLP localized to site G8 on Chromosome 4[12]. RFLP studies in psychiatry have recently included some controversies. There are, however, an estimated 30,000 of the 100,000 human genes that involve the brain. Presently some 500 of these brain genes are known, putting psychiatry in a position to have an exploding base of knowledge as work proceeds on the human genome project in the coming decades.

## Findings

The well-established clustering of psychiatric illnesses in families has strongly suggested a genetic transmission for these disorders. The mode of inheritance, however, does not seem to be simple; genetic heterogeneity, incomplete penetrance and variable expression have been proposed as etiology.

In the late 1980s, RFLP studies showing linkage in bipolar disorder and schizophrenia promised an exciting diagnostic future involving the genetics laboratory in psychiatry. Egeland and colleagues[13] studied the old-order Amish population and found linkages between bipolar disorder and chromosome 11 p loci[14]. However, a reanalysis of the same cohort by Kelsoe et al showed a decreased LOD score, and they have recently reported that the original finding was a "false positive" result[15].

Similarly, the exciting finding reported by Sherrington et al in schizophrenia (chromosome 5 q 11 - q 13) has not been replicated. These "false starts" in molecular genetics have provided a degree of caution when it came to the recent announcement of the "alcohol gene"[16,17].

Even though the results of linkage studies are currently uncertain, molecular genetics has moved the psychiatric paradigm into the cell. Numerous studies are being published, using DNA technology, that increase our neuroanatomical, neurophysiologic and neuropathophysiologic understanding of psychiatric illness. The action of psychotropic drugs with side effects on ion channels, receptors and ion pumps in biological membranes are being currently researched[18,19,20,21,22].

Both the diagnostic and therapeutic impacts of the new technology lie in the future, but clearly a correction of the data in the early RFLP studies should argue for some caution in our expectations. Kelsoe suggests that a complete systematic screening of DNA markers in the entire genome may be necessary to find the chromosomal locus of the disease-susceptible gene; the effort is already under way.

## Summary

Psychiatric literature includes molecular genetic studies with far reaching implication for diagnosis and treatment. Although this interface is in its infancy, it does require, as we have presented, another paradigm shift for the psychiatry clinician. As neuroscience came to eclipse psychoanalytic views in psychiatry, it appears that the "cell" either in preclinical or clinical studies has become the focus of study as opposed to the "brain." As has occurred in other medical specialties, these molecular genetic studies promise to become more clinically relevant, with the potential of more productive lives for psychiatric patients.

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*(Continued on page 420)* ➤



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Beula B Horak MLS
Claire C Hamasu MLS

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Many health professionals are taking advantage of the opportunity to bring world-wide medical information into their offices by doing their own computerized literature searches; numerous Medical Schools and Residency programs are now incorporating online searching skill classes into their curriculum. David J Elpern MD of Kauai states: "In today's world an online search is as positive an addition to medical practice as X-rays or biopsies were in the decades past."[1] If you have been considering trying your own searches, Grateful Med may be the answer for you.

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The Grateful Med program is available for both IBM and Macintosh computers. The IBM version requires DOS version 2.0 or higher, a Hayes Smartmodem or fully compatible modem, at least 384K RAM (512K RAM recommended), and one or more floppy disk drives (a hard disk with a minimum of 2MB of free space is strongly recommended).

The Macintosh version of Grateful Med will work on a Macintosh Plus, SE, SE30, and II Series. It requires System 4.3 or higher and a Hayes or Hayes-compatible modem. Most users also attach a printer. The program comes with free updates, a user manual, troubleshooting guide, and an excellent tutorial.

**For more information**

Hawaii Medical Library has received an 18-month grant from the National Library of Medicine to introduce Grateful Med to all health professionals in Hawaii who are not affiliated with a medical library and to train them on Grateful Med. If you would like to be part of the program, or if you are interested in a Grateful Med demonstration, please contact Beula Horak or Claire Hamasu at Hawaii Medical Library (536-9302).

Information on Grateful Med is also available from the librarian at your hospital, or from the National Library of Medicine MEDLARS Management Division in Bethesda, Maryland at 1-800-638-8480.

*(Continued)* ➤

Reference Department, Hawaii Medical Library

Requests for reprints to:
Beula B Horak
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## TUBERCULOSIS *(Continued from page 415)*

who are already infected. Physicians should be aware of the many ways in which TB presents a particular threat to them. Hawaii law requires periodic evaluation for TB of health-care providers employed by various institutions such as hospitals and care homes. Although most physicians are not covered by these statutes, physicians should be aware of the recommendations for periodic screening and should assure themselves that they too be screened periodically.

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# In Review

## The 1991 Henry J Kaiser Lecture

Denham Harman MD, Millard Professor of Medicine and Biochemistry at the University of Nebraska Medical Center, spoke at the John A Burns School of Medicine (JABSOM) B-103 auditorium the evening of November 14, by invitation of the school's Committee on Special Lectures and Symposia, Prof Richard John Guillory, Chairman. Professor Harman's topic was "The Biology of Aging."

Dr Harman was introduced by JABSOM Assistant Dean Satoru Izutsu PhD, to a sparse audience of perhaps 40 people.

Dr Harman prefaced his remarks by pointing out that the exact etiology of the aging process is still unknown, but it starts in the cells of the human body at age 28 in the average male and proceeds inexorably but gradually until he reaches 75, his current life expectancy (LE). Women's LE is now 80 — a male:female difference of 11%. The oldest human being has had a confirmed age of 115 years. Harman mentioned that the Japanese have the highest LE.

The anatomist, physiologist and cellular biologist can see the changes that take place, the most significant of which seems to be in the mitochondria. The process of cell division consumes a large amount of energy that is a function of oxydants. Mutations also increase. These changes seem to be the result of an accumulation of free radicals (FR).

As a consequence, all bodily functions deteriorate (eg, Jimmy Connors, the aging tennis player, is being beaten at the game by his age and not necessarily by the superior talent of his opponents).

Some people consider aging to be a disease. However, it is the interaction between diseases and aging that has an impact on the latter; it is the likelihood of the former intervening with the curve of LE that makes for a straight line on the graph of the exponential chances of death occurring.

The major diseases that affect LE are cancer and atherosclerotic vascular disease. Medical treatment can have a beneficial influence on disease, but so far we have not found a way to slow down aging. Harman stated that we have probably reached a plateau of beneficial intervention in the atherosclerotic diseases, but not against cancer. The list of diseases in which the presence of FRs seems to have a major impact is a very long one, and growing in length.

He went on to prove the hypothesis that it is oxidants that produce the FR biochemical reactions that do the damage that leads to aging. The FR reaction is one in which a molecule is broken down and loses an electron, making of it a molecule with imbalance — with one electron that isn't paired. [As a retired GP, but an active medical doctor, I wouldn't swear to the facts in this hypothesis, but presume that it is the metabolic "oxygen burst" within the cell that produces these FRs; a reader please to correct me if I have it wrong./Ed]

Apparently, according to Harman, there are many compounds in our environment that contribute to the accumulation of these free radicals in our bodies; he listed a large number, among them exhaust fumes from gasoline fuels, from the smog in Los Angeles and also from lo-dose, natural radiation all about us (a person gets 100 millirems while flying from Hawaii to the Coast) [and more so the result of man's splitting of the atom for peaceful — and also for military — reasons/Ed].

Prof Harman then proceeded to enlighten us on the research that is being directed at trying to ameliorate the aging process and to increase the span of life. He indicated, however, that nature itself has devised many forces that counter the rise of FRs in the body. The research, so far has come up with only 3 compounds that do have an effect on the FRs; the antioxidant Vitamin E — a tocopherol — is one of them. The primary research is on laboratory mice, genetically bred to be true. Experiments first indicated that semi-starving them, ie restricting their diets by 30% calorie-wise, increased their life span [I was disappointed to hear his answer to a question from the audience post-talk, that no attempt had been made, or recorded, as to whether those poor mice had a lower enjoyment of laboratory life as it was extended!/Ed]. Theoretically, their metabolism was lowered, ie there was a lesser production of FRs by oxidants going on at their cellular biochemical levels.

Harman cited research now being stimulated in China and Japan to determine the effects of herbal medicines, to find out their basic components that seem to influence longevity; they seem to have an effect on the mitochrondrial function. He also cited research on a large cohort of women on the Guernsey Isles in the English Channel, that seemed to indicate that high doses of Vitamins E and C resulted in a lowering of the incidence of breast cancer.

Of considerable interest to us in the audience, was Harman's citing of the study of the amyloidosis which he said was an indicator of Alzheimer's disease. He felt that Senile Dementia and Alzheimer's were one and the same and not separable by the age of the patient.

On analysis, it was an interesting lecture, well presented and on a subject that is at the cutting edge of research into the mechanism of life itself, even though, in retrospect, it was rather amazing that it was approached from the end of man's life span, not its beginning.

However, we have a certain concern with modern man's propensity to open another Pandora's box. Having released the contents of the atomic box — to what ends of the potential for the destruction of the human race, no one knows — man now is probing into the innermost secrets of cellular biology. This may lead to an unacceptable exponential growth of nursing homes populated with helpless 150-year-olds, perhaps!

J I Frederick Reppun MD, reporting

# Maka O Ka Kauka

Russell T Stodd MD

**Lust for power is the most flagrant of all the passions. The only way to look on a politician is down.**

Please forgive a purely political note: One must wonder why we continue to send the career politicians back into office. While terms are limited for the President, for most state governors and many mayors, no such constraints are placed upon the re-election of our Congressional representatives. Without doubt, that time has come. The abuse of travel allowances and the franking privilege, the millions in special interest campaign funds, the continuous pork-barrel budgets, the complete failure to address spending abuses, the incredibly expensive S&L disgrace, the massive self-generated personal staffs; in which more than 100 house members wrote bad checks in excess of $1000 (covered without penalty). These add up to intolerable, almost negligent behavior. No one can dispute that voters must bring about a return to a citizen, not a "professional", legislature and send these pampered, pretentious, posturing, priggish popinjays into the rank and file of working people.

**Sooner or later, the worst possible set of circumstances is bound to occur.**

Eye surgeons have already taken a major cut in Medicare reimbursement based on "overpriced procedure," and are now facing further reductions under a formula related to practice expense. HCFA proposed an overhead practice cost of 44.4%, but many ophthalmologists assert that their expense are somewhat between 52% to 60%. As one eye surgeon put it, "My prices are set according to a centrally planned economy, one guaranteed to fail here just as it has failed in the USSR." Example: By 1996 under the proposed fee schedule, fluorescein angiography will be reimbursed at $60/study. It should be obvious that the cost of the camera, $15,000, film $5, photographic tech $20/hr, film developing-processing $30, injectable fluorescein $5, attendance of nurse or physician, plus the time of ophthalmologist interpretation, adds up to considerably more than $60 per case. Locked into such a scheme, ophthalmologists will be losing money with each study performed. Is anyone thinking?

**Corpus on the rocks — with a twist of Lyme.**

The leading vector-borne disease in the United States is Lyme Disease. Most cases remain concentrated in well-established areas in northeastern, north-central and Pacific coast states. Seven states account for 81% of the total. The frequency of the disease has increased 16-fold in the last 10 years, but has yet to span the Pacific to Hawaii Nei. Lyme *retinopathy* was recently reported in the Archives of Ophthalmology.

**Never argue with the people who buy ink by the gallon.**

From your friendly, local, bankrupt Medicaid office, the Health Care Administrator, Winifred Odo, informs us that all claims will be aged *at least 15* days from the date that the claim is received before it is paid. She thanks us for our "continued support." So, if you wonder how to pay your rent, tell your landlord the payment is on the way — but first it has to mature in Medicaid's bank account. And thank him for his continued support.

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Seventy percent of physicians spend 1% or less of their gross income on marketing, including the cost of employees' time. One reason may be that only 10% of respondents believe their efforts "significantly" increased patient or procedure volume. More than half saw little or no increase. Highest marketing budgets exist in multi-specialty, hospital-based and surgery practices. An additional reason for low individual marketing expenditures might be that many doctors believe that marketing is an outgrowth of quality professional practice, not a function of newspaper ads, newsletters or TV blurbs.

**On the whole, I would rather be in Philadelphia.**

Next year, in both Oregon and Washington, the state legislatures plan to consider laws that will remove the threat of criminal prosecution of doctors who help terminally ill patients to die. The requests would have to be in writing, and the patient would be required to be competent at the time that the physicians help them to die. The Washington State Medical Association is in opposition to the proposal. Other states expected to consider such measures in the future are California and Florida.

**I not only use all the brains I have, but all I can borrow.**

Medicine has an effective ally working to alert HCFA about the threat to doctors under the reimbursement formula planned with the RBRVS. The powerful *American Association of Retired Persons* wants Ms Wilensky to consider carefully the proposed changes in the way doctors are paid under Medicare, arguing that the new rules could lead physicians to shift more costs to beneficiaries. "Payment reform was intended to make Medicare Part B fairer for both doctors and beneficiaries, and should be implemented as Congress intended," said AARP legislative director John Rother in a letter to HCFA. Additional support has come from Congress where 384 of 535 members have voiced support for the medical profession's position. But who does HCFA really serve, the public, or its own growth and power?

**Addendum —**

— U.S. physicians see an average of 114 patients per week, but in South Korea doctors treat an average of 155 patients per six hour day!

— Is Taco Bell a Mexico phone company?

— Did I tell you about the Portuguese who snorted Nutra-Sweet thinking it was Diet Coke?

Aloha, and keep the faith.

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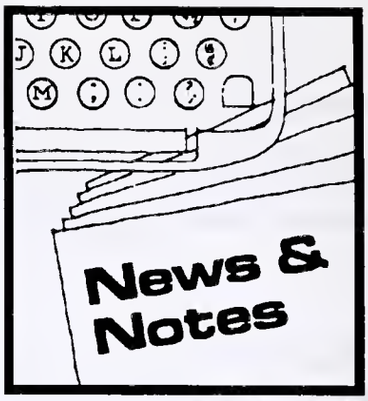
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Henry N Yokoyama MD

## Miscellany

A tourist in a stalled car on a lonely country road was checking under the hood when he heard: "Can I help you?" He looked around and saw no one except an old farm plug. He continued tinkering with the motor. Again the voice: "Can I help you?" Tourist to horse: "Are you talking to me?" Horse: "Yes, I am addressing you, sir. Not only can I talk, but I won the Kentucky Derby in my day." The tourist agog with excitement reached the farm house nearby and asked the farmer if he would sell the animal for $50. "Fifty dollars for an old horse? You are daft." Then he lowered his voice so that the horse could not eavesdrop: "Incidentally, you didn't believe that story about him winning the Kentucky Derby, did you?"

(As told by Walter Quisenberry who heard it from Jack Lewin)

## Oncology Dialogue

Chemotherapist Ken Sumida presented a 33-year-old $P_0G_0$ woman with Hodgkins and positive supraclavicular and Rt axillary nodes. Moderator Glenn Kokame explained that it was standard procedure in most institutions to first do a staging laparotomy with splenectomy before radiation. If the laparotomy showed her pelvis to be free of disease, the radiation could be confined to the upper body. Ken had explained this to the patient, but she resisted surgery because she wished to preserve her fertility and being a bodybuilder, she did not want any unsightly scars. Someone suggested a laparoscopic exam, but Glenn explained that laparoscopy would be inadequate for staging.

The radiotherapists and chemotherapists presented their views pro and con, but most agreed that a staging lap was a must. Finally, radiotherapist Ed Quinlan spoke in frustration: "Does she understand that the staging lap may save her fertility?" [It had been pointed out earlier that 25% of Hodgkins patients have a negative pelvis and would not need pelvic radiation./Ed] Ken: "I have explained that." Quinlan: "Women just don't seem to understand. They think surgery means infertility. You have to explain and explain." Ken was convinced.

## Conference Humor

Endoerinologist Doris Bartuska from Medieal College of Pennsylvania was the outstanding visiting professor in August. When asked to come to Hawaii, she replied, "I'm delighted, but you must promise a good-weather weekend." It seems that last winter she had to give a lecture in the northern part of her state. She left Philadelphia on a eold but dry day, which later evolved into the worst snowstorm of the year. A quarter mile from the hotel, she had to abandon her car and trudge through the snow. When she found the conference room, there was one person in the audienee. She waited, but no one else eame. She made her presentation to an audienee of one, and he clapped and asked pertinent questions. As she started to retrieve her slides in order to leave, he said, "Sit down ... You're not going anywhere." She asked, "Why not?" He replied, "Beeause I'm the next speaker." He had driven all the way from New York.

## Variety School Honors Calvin C J Sia

(Extraets from Ross Hagino's warm tribute to Cal at the Variety Sehool of Hawaii's 30th Anniversary dinner at the Ilikai Hotel Paeifie Ballroom on Oct 16)

"I was asked to say a few words about the person who is being honored here tonight. I met Calvin Sia in 1957 when he was a senior pediatrie resident, and I was a junior resident at the old Kauikeolani Children's Hospital on Kuakini Street.

"At that time we were still seeing some of the ravages brought on by poliomyelitis so that some children were in iron lung machines and a whole floor was set up for rheumatic fever. At that time we had no medical school but the hospital was fortunate in having as director of medieal education, Dr Irvine McQuarrie, who had just retired as chair of the Department of Pediatries at the University of Minnesota Medical School. He was a renowned pediatrieian and a very inspiring person. His residents subsequently became pediatric department ehairmen in some 17 major medieal schools around the country. He set up a program of teaching here at the old children's hospital of visiting professorships, and each year, 3 of 4 very illustrious pediatrie professors eame to teach. Each stayed for 2 or 3 months, not giving just a few leetures and leaving for the beaeh, but making daily rounds and socializing with the residents imbuing them with the importanee of pediatrics and the need to be advocates for ehildren — since they couldn't speak for themselves.

"I believe this is where the spark was ignited in Dr Calvin Sia.

"He started private practice in 1958 and soon built up a very busy praetiee. While most of us are satisfied caring for our "own" patients, Cal wanted to do more. I think he realized that in order to do more

*(Continued)* ➤


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for the children in the community, he had to enlist the help of the public at large. In a democratic society, this means getting the community leaders and especially the politicians interested. This took time away from his practice and his family. Endless meetings and conferences were attended. Hundreds of trips to the Mainland were taken. Much of the expenses were paid out of his own pocket.

"That he succeeded in his endeavors is illustrated by the honors bestowed on him.

"In the June issue of *Contemporary Pediatrics* (1990), a national magazine, Calvin was highlighted in an article describing the accomplishments of his career in improving the lives of children. Senator Dan Inouye had the article printed in the Congressional record of August 2, 1990. In making the presentation, Senator Inouye paid tribute to Cal for his ideas and efforts in establishing demonstration pediatric emergency care services. The Senator introduced the bill and it passed with an initial funding of $2 million a year for 3 years. This project is ongoing.

"In September of this year, Cal was awarded the C Henry Kempe Memorial Award, given to the professional who has made extraordinary contributions in the field of child abuse and neglect. Dr Kempe was the person most responsible for bringing the problem of child abuse to the public forefront. He was chair of the Department of Pediatrics at the University of Colorado. He was also a visiting professor several times at the old Kauikeolani Children's Hospital.

"In the spring of 1992, Cal will be presented with the Jacobi Award in New York, a major award named for Dr Abraham Jacobi, considered to be the founding father of pediatrics in America. It is awarded jointly by the American Medical Association and the American Academy of Pediatrics to the pediatrician who has done the most to help the children of our country. In the past it has been presented to very famous and distinguished professors of pediatrics, some of whom were visiting professors here during Cal's residency.

"Of interest historically, the fifth recipient of the award, in 1967, was Dr Ashley Weech, who was then chair of the Department of Pediatrics at the University of Cincinnati. While he was a visiting professor in China, he performed a tracheostomy on a child who had difficulty breathing. That child happened to be Calvin Sia.

"As you can see, Calvin Sia has been awarded many honors, and deservedly so, but it has not been a "one-man" show. No one can spend as much time traveling around the country attending conferences, giving lectures and lobbying for funds unless there is a home to come home to. Someone has to raise the children, balance the household budget, keep the house from falling apart as well as entertaining people never seen before. That person is his wife Kathy Sia, whom I also admire very much. I think Cal would be the first to agree how much help she has been.

"In closing, Cal, I am sure that Dr Irvine McQuarrie would be every bit as proud of you as he was of his other illustrious ex-residents." ■




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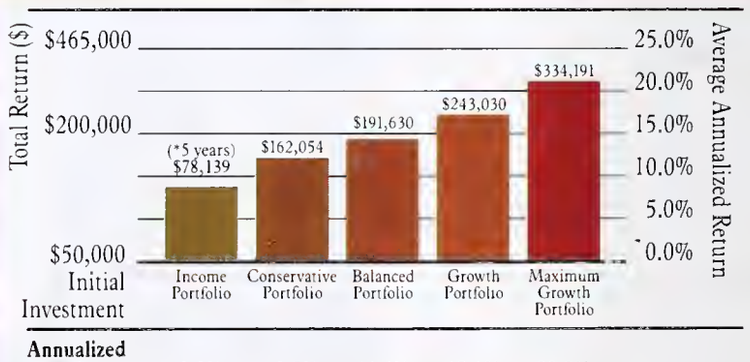
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